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BRIEFLY TOLD.

THE SECOND VOLUME, PROCEEDINGS AMERICAN GAS INSTITUTE.—The "Proceedings" of the American Gas Institute, Volume II., which contains an accurate and voluminous repeating of the incidents and general work occurring and transacted at the Washington meeting (October, 1907) of the Institute has been sent to those entitled to receive it. The book is in every sense a credit to its compilers and publishers, and those concerned in its publication are to be congratulated on its prompt appearance. President Humphreys, in his general notification respecting the issuance of the Volume, asks especially that members not having received copies of it will at once notify Assistant Secretary Bissell of the fact so that the missing numbers may be immediately traced. Attention is also particularly directed to the leaflet inclosed as a folder in each book giving a list of publications on hand and for sale by the Assistant Secretary. The President hopes that members will avail themselves of the opportunity so presented of purchasing publications for their libraries, and at the same time benefit the Institute.

MAY MEETING, ILLUMINATING ENGINEERING SOCIETY, NEW YORK SECTION.—Mr. Preston S. Millar, Secretary of the New York Section of the Illuminating Engineering Society, informs us that the May meeting is set for the 14th inst., at 8:15 P.M., in the United Engineering Societies Building. Dr. E. L. Nichols, Professor of Physics, Cornell University, is to be the speaker of the evening, and he proposes to submit an illustrated paper on "Daylight and Artificial Light." According to Secretary Millar's official notification of the meeting, Dr. Nichols has recently travelled extensively throughout Europe and Northern Africa, making spectro-photometric determinations of the quality of daylight under widely varying conditions, involving about 150 sets of observations. Deducing from these an average value of daylight, he compares various artificial illuminants to such value through spectro-photometric measurements. Advance copies of the paper will be mailed upon request, and a general invitation to be present is extended. It is surely needless to say that it seldom happens to the layman to have such great opportunity to listen to a man of the superlative attainments of Dr. Nichols in this particular field; and the opportunity should certainty be availed of to the extreme.

THE NEXT CONVENTION OF THE NATIONAL COMMERCIAL GAS ASSOCIATION.—We are indebted to Mr. Frank W. Frueauff, President of the National Commercial Gas Association, that, at a meeting of its Directors, held in the Cadillac Hotel, New York, April 28th, it was formally decided to hold the next convention of the Association in Chicago, December 8th, 9th and 10th. In connection with the convention an exhibition of gas appliances will be held. The National Commercial Gas Association will have the co operation of the American Gas Institute in giving this exhibition, the Committee having it in charge being made up of members from both bodies.

THINGS WERE NOT SO BAD AS THEY SEEMED.—Mr. W. E. Barrett, who has charge of the gas engineering division of J. G. White & Co., Incorporated, makes it plain that our correspondent of a week ago, in regard to that cheap tar disposal reported to have occurred in Davenport, Ia., early in April, was not quite in line with the facts. Mr. Barrett puts the thing right in such clever manner that we will about use his own words regarding it. This is something like it: * * * "I notice in your issue for the 27th April a story which apparently came to your office by way of Davenport, couched in the following introduction: 'Here is a story of waste which comes to us by way of Davenport, Ia.,' relative to an estimate of 30 carloads of tar which must be removed from an unused holder tank, and that the same had been donated gratis to the Lewis Roofing Company for the privilege of removing it from the tank. It would appear from this statement that the property of those connected with the interests, which would be likely to produce tar under the circumstances named, was being rather carelessly handled, if the information as stated were accepted as correct. The fact is, however, that the Lewis Roofing Company paid the Davenport Gas and Electric Company a very good price for the privilege of removing about 1 ton of rust, partly coated with tar, which was known as the remains of the original 30,000 cubic foot storage holder installed for the service of Davenport in 1856 or 7, and later converted into a water gas relief holder. As an inducement to remove the aforesaid rust, brickbats, old boots, hoops, cinders and sundry other accumulations of half a century, which conglomeration has been known to the gas fraternity as 'B. S.,' was thrown in. Had the informant had sufficient intimacy with the gas business he would have 'guessed more nearly' 3 wagon loads of available material than 30 tank car loads. The boy again pays a high price for his whistle, and he cried until he got the building contractor to assist in the removal of the 'B. S.'"

Bureau of Information, The American Gas Institute.

We are indebted to Mr. W. A. Baehr, Chairman, Bureau of Information, American Gas Institute, for the following official statement respecting the replies to Question No. 8, which Question was primarily published in the JOURNAL. The correct order is: First, the question; second, the answer thereto, from the Bureau, *per se;* third, an answer received at large:[1]

Question No. VIII.—"Given a choice of three retort houses, one built with 22-foot, through retorts, the second with 15-foot retorts, the third with 9-foot, stop-end retorts. The treatment of the gas beyond the standpipe is identical in the three works. The 22-foot, through retorts are charged and pushed by the machinery best adapted for them, and the heating of these retorts is the best that can be secured in the present state of the art. These retorts have a standpipe at each

1. The answer-at-large (by Mr. F. Egner) will have to be held over one week.

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end, which standpipes are kept clean by stokers in the usual way, assuming the best retort house practice in this respect, but not assuming any special machinery for reaming pipes. As the tendency of one of the pipes of each retort to do less than its share of the work is well known, ordinary watchfulness, such as might be expected in any well organized gas plant, is to be assumed as guarding against this tendency, but no extraordinary precautions, the successful application of which have not been proven in practice. The 15-foot, through retorts are assumed to be charged and pushed by the machinery best adapted to these retorts. The heating of these retorts is assumed to be the best that can be secured in the present state of the art. These retorts have only one standpipe. Both the 22-foot, through retorts and the 15-foot retorts are charged as full of coal as the best practice would direct, there being no such limitations in this respect as with a retort where the coke cannot be pushed out. The stop-end retorts are also assumed to be charged by machinery and heated in the best possible manner. These retorts have one standpipe and they are charged as full as the process of withdrawing the coke with a machine rake will allow.

"Neglecting all personal factors, and assuming that each works is operated under conditions best suited to its equipment; assuming that the same coal is used in the three works, and that this coal is a good grade of gas coal, such as the well-known gas coals of the Pittsburgh field, and that the same heats are carried in all three works so that the same yield of gas per pound of coal is secured in each, which may in turn be assumed at 5 cubic feet per pound, what difference of candle power and heat units may reasonably be expected in the finished product of the three works, because of their varying factor of retort lengths; and what are the reasons for this opinion?"

ANSWERS.

The answer of the Bureau of Information follows:

From the manner of the statement of this question, any answer thereto must be to a great extent academic, since there are no published data covering a direct comparison of results under the limitations laid down. There is enough exact knowledge of the results to be obtained from Pittsburgh coal carbonized in 9-foot stop-end retorts charged by machinery, to be able to state with confidence that the best average working under the conditions stated would give a gas of about 15.5-candle power, flat flame measurement, with a heating value of about 625 B.T.U per cubic foot.

The relative efficiencies for the through retorts would be affected by the following considerations:

1. Effect on the gas of greater lengths of travel in contact with the heated surface of retort.
2. Modification of this effect caused by reduction in area of gas space due to heavier charges in the through retorts.
3. Effect of such heavier charges on the quantity of gas produced.

Taking up these conditions in order, all authorities agree that the exposure of coal gas to contact with highly heated surfaces results in diminished candle power due to the "cracking" or "breaking-down" of hydrocarbons to other forms, usually with deposition of free carbons. Butterfield, in "Chemistry of Gas Manufacture," Second Edition, page 72, says:

Little is known of the nature of the constituent hydrocarbons of ordinary gas coal. In certain rich coals hydrocarbons of the paraffine and olefine series are undoubtedly present, and their behavior under treatment to which coal is subjected in gas manufacture may be considered with advantage, being doubtless analogous to that of the constituents of ordinary gas coal. The higher members of the paraffine series of hydrocarbons ($C_n H_{2n} + 2$) break down even at temperatures below their boiling points under normal pressure to lower hydrocarbons of the olefine series ($C_n H_{2n}$). Thus—

$$C_nH_{2n} + 2 = C_n H_{2n} + 2 + C_n H_{2n}. \quad \text{Where } 2_n = N.$$

Assuming that this action occurs when a high temperature is applied to the lower members as well as the upper, we should find the paraffines resolved chiefly into ethane and ethylene. Now, at a red heat ethane yields methane, carbon and hydrogen, thus—

$$C_2H_6 = CH_4 + C + H_2.$$

From paraffine hydrocarbons we should, therefore, expect to obtain the gases methane, ethylene and hydrogen and a deposition of carbon.

The hydrocarbons of the olefine series break up at red heat to lower members of the same series, to members of the acetylene series, to methane and other paraffines in small quantity. Thus from ethylene are obtained methane, acetylene and smaller amounts of ethane and other hydrocarbons. Now, acetylene at a red heat polmerizes to benzene, and thus a new series of hydrocarbons is introduced. We have seen that acetylene readily polmerizes to benzene, and either indirectly or directly this body also is formed at a red heat from the vapors of most methane derivatives. Together with it are formed some of its homologues, also diphenyl, naphthaline, anthracene, phenanthrene and other products containing either the benzene nucleus or condensed benzene nuclei. * * * It is a commonly observed fact that the yield of benzene and other aromatic hydrocarbons is greatest when the heat is intense, or its application to the vaporized hydrocarbons prolonged, and this is in accordance with the principle that benzene is formed at a higher temperature than the gaseous methane derivatives, and that it is probably the result of a secondary action.

The total loss in heating value due to such "cracking" is quite small in comparison to the loss in candle power. For example:

C_2H_6 cracked by heat to $CH_4 + C$, or
C_2H_6 " " $CH_4 + C + H_2$

would suffer almost total loss of candle power, but the resulting gaseous products would retain all but 30 per cent. of the original heating value in the first instance and all but 25 per cent. in the second. As a matter of fact, the reactions that actually occur in the breaking down process are quite complex, but the main effect as indicated above sufficiently illustrates the principle involved.

The extent to which a gaseous hydrocarbon will suffer decomposition, by contact with surfaces heated to a certain temperature, is a function of the time of exposure to such contact, and this again is controlled by the relation of area of surface to speed of flow.

In a through retort with two standpipes it always happens that one pipe or the other takes most of the gas, so that the distance through which the gas must travel to reach the standpipe would be, for most of the gas produced in the 22-foot retorts, at least equal to the length of travel in the 15-foot retorts. It is reasonable to suppose, therefore, that the cracking effect on the gas would be approximately alike in each case.

The heavier charges in the through retorts decrease the area of exposed heated surface as compared to stop-end retorts, and we may safely assume that the increased speed of flow will compensate for the greater length of retort and so equalize the cracking effect of contact with heated surface that there will be very little difference in quality due to this cause.

As to the effect of heavier charges. Experience has demonstrated that small retorts run at moderate heats and, charged by hand with light charges, are capable of giving better results in yield, quality of gas and quantity of residuals than the larger retorts charged by machinery and run at higher heats. Coal in a thin layer parts with its volatile constituents quickly and uniformly, but in larger masses the heat penetrates slowly to the interior of the charge, with the result that the center is not well coked while the parts nearer the heat may be exhausted of gas to an injurious extent. It is an axiom in retort house practice that the results from two retorts, one too much burnt off and one too little, cannot average up to the results from two retorts each properly burnt off; and this principle applies in some measure to heavy charges and would result in diminished candle power for the same yield of gas per pound.

The final theoretical conclusion to be reached is that, under the condition stated in the question, gas made in either the 22-foot or 15-foot through retorts will be lower in candle power by probably not more than ½ candle than gas made in the stop-end retorts, and that the heating value will not be materially different.

There seem to be some practical results which do not bear out the above theoretical conclusion. From results obtained in long, through retorts, in the vicinity of Boston, it would appear that the gas made therein need not be less in quantity nor lower in candle power than the gas made in the stop-end retorts.

Another direct comparison between stop-end and through retorts was made in the West Side (Milwaukee) plant, where, with two duplicate units, maintained independent from retort to the holder, they ran for a time with one stack of benches operated as 9-foot 6-inch stop-end retorts, and the other stack, with every other detail exactly the same, operated as 21-foot 9-inch throughs. They found that, with similar heats and similar charges, there was a slightly lower candle power obtained from the throughs than from the stop-ends, the heating value, however, ranging from equal to 5 per cent. higher. With heavier charges in through retorts they were apparently able to obtain practically the same results as from the stop-ends, though at times a slight falling off in the candle power was noticeable. It is but fair to the through retorts to say, however, that they were not able to fill them as full as they should have been filled, due to the character of the discharging machinery which they were then using. In the through retort, used under its most favorable conditions, discharging by pusher, and with charging machines capable of laying a maximum charge in the retort, the condition as to everything but yield should be improved from what practice in Milwaukee actually shows, and it can, therefore, be assumed that, with the improvement, due to shorter time contact between the gas and the heated arch of the retort, that practically identical candle power results might be expected, assuming, of course, that both types of retorts were operated to their maximum capacity.

There is always more difficulty experienced in burning off the heavier charges employed in the through retrots, and it is found in practice that it is advisable to increase the carbonizing period slightly to obtain equally good results.

So far as the standpipes are concerned it was found, by an elaborate series of tests in Milwaukee, that the gas always went out unequally at the two ends of the retort, but that, by using ordinary diligence in keeping the pipes clean the variations in temperature of the gas ascending the two standpipes seldom were very great, and the average temperature always was lower than with the stop-ends; and at that time they were operating under exactly similar conditions in the adjoining stack.

It does not appear amiss to the Bureau in answering this question to call attention to the great practical advantages to be derived from the use of through retorts, the simplification of machinery, the ability to use types of machinery which do not leave the retorts open at all, the greater ease of decarbonization of retorts and patching the same when necessary, the smaller investment for bench iron work, decreased hydraulic main maintenance, greater output per given area of land or of retort house, the carrying out of the coke on one side of stack, cutting down the expense of installation and of handling and keeping coke and the resultant smoke, coke dust and steam away from the side of the stack on which the operating machinery is located, and the material reduction in the number of men required to operate the benches.

As to further literature bearing on this subject the Bureau wishes to call attention to a paper, read by Mr. B. O. Tippy, before the Michigan Gas Association, February 22, 1899, and published in the AMERICAN GAS LIGHT JOURNAL, March 20, 1899.

[Official Report.—Continued from Page 712.]

FOURTH ANNUAL MEETING, ILLINOIS GAS ASSOCIATION.

Held in the Auditorium Hotel, Chicago, March 25 and 26, 1908.

First Day—Morning Session.

The President then introduced Mr. W. E. Hartman, of Joliet, Ills., who read a paper entitled

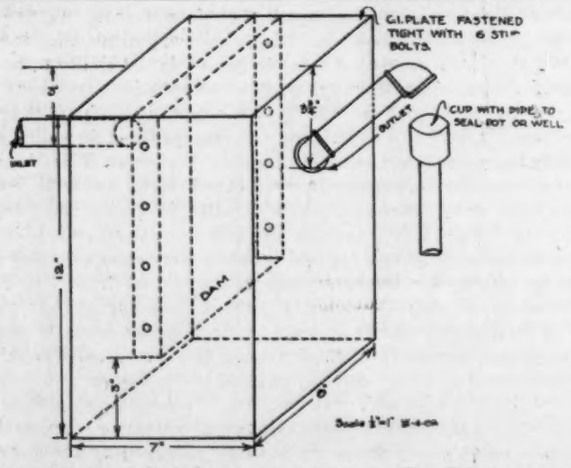
RETORT HOUSE PRACTICE.

[For the text of the Hartman paper, see Journal, *ante*, p. 579.]

Discussion.

Mr. Honberger—This discussion was to have been opened by Mr. E. W. Eustace, of Peoria, but owing to the fact that Mr. Eustace has unfortunately been called away I have been asked to substitute. In taking up the able exposition of Mr. Hartman, on the subject of retort house practice, it must be said he left little to be discussed, for he has covered all the really important points clearly and concisely. The object of discussion or criticism of any article is not to find fault only, but to see that all the good features possible in the exposition are brought out, and so, having been able to find only good, it will be necessary to enlarge upon its excellent features. The operating conditions at Peoria and Joliet are similar, the gas plants of both cities being in possession of benches of 9's. The results obtained are very much the same regarding size of charges and gas made per retort. We wish to emphasize very strongly the suggestion Mr. Hartman made regarding the accessibility of the hydraulic main as to cleaning, and also the use of the two openings for the t ke off of ammonia liquor and tar. At Peoria we have an automatic arrangement similar to the one described by Mr. Hartman, though it is difficult for us to say that our seal has been made any steadier by its use. If anything, in fact, it has been subject to a greater variance than when we had the old-style overflow and seal pot and drew off the tar by hand. We find, when the vacuum is changed by the exhauster engine failing to take up the load properly, due to some obstruction in the apparatus, the seal is thrown out and there is no possibility of making up this seal without refilling with fresh water or pumping liquor. To do away with this trouble of an unsteady seal, we put into use an equalizer on the overflow pipe, but only in a measure has this diminished the trouble. As a suggestion, we would like to add that the use of an old-style seal pot, in connection with the tar settling tank, would in all probability do away, at least to a very great extent, with the trouble of unsteady scale. In connection with the problem of a seal, it will be wise to discuss some of the other troubles in the hydraulic main at this time. There is great room for improvement of the hydraulic main, especially in the pockets and openings provided for in cleaning and removing obstructions in the main; and we must all agree with Mr. Hartman when he says that "the hydraulic main should be easily accessible." We will forego the discussion of the construction work which Mr. Hartman outlined and refer briefly to heating up new benches. After drying out our benches we find that the best results are obtained in the life of the bench by having just sufficient heat to make between 9,000 and 10,000 feet of gas per retort, continuing this practice for 40 or 50 days. By that time the settings and retorts are thoroughly seasoned, so-to-speak, and we practically have no trouble with sagged retorts. After our bench has once been adjnsted to the proper heat, it is, as Mr. Hartman said, unnecessary to tamper with air slides and damper. We have a stack of 7 benches of 9's in use for 18 months without touching dampers or air openings. It has been necessary for us to scurf our retorts at intervals of 6 weeks, using air blast under 6 inches of water pressure, the blower being operated by a motor. With smaller plants it is a question of economy whether or not it is cheaper to use natural draft, a steam jet, or other similar contrivances to decarbonize. However, I have found the air blast very satisfactory. In conclusion, I can only repeat the sentiment already expressed, that Mr. Hartman has left but little to be said after his treatment of the subject, and I am sure I voice the sentiment of the members present when I say we should thank him for his efforts.

Mr. Rhoades—I agree with the gentleman who spoke just before me, for I consider this one of the best papers along the lines of retort house practice that I have read. Although it is given as experience of those who are using benches of 9's, still I think, in most cases, those who have benches of 6's, or even 4's, will find that the main points of the rules laid down by Mr. Hartman in regard to operation can be followed. As far as construction is concerned, as mentioned by Mr. Hartman, not one point has he given, I think, that is assailable. He has raised a good point in regard to durability of benches, when he insists upon thorough work in the foundations and in the setting of his retorts, and the setting of the blocks which are to support the same. I have had experience with cracks filled in with fireclay to take the place of the solid joint, and in every case I found it impossible to make the fireclay fuse with the brick in order to hold up the retorts or the furnaces, which resulted in the retorts dropping anywhere from 4 to 6 inches as the setting settles down. The last benches that were placed for us I watched very carefully, and wherever the joints were large, or that would require from ½ to ¾ inch joint being made up of fireclay, I insisted upon the masons cutting out of these setting blocks at least 1½ or 2 inches, so as to insert a solid piece of firebrick, in which manner to make a solid joint. We hope this will do away with any sagging of the retorts and lengthen out the life of the bench, for the sagging of the retorts by placing such a strain upon them is one of the things that causes them to crack and to create holes, which are so troublesome. Regarding the size of the retort and the charges. I am very glad Mr. Hartman brought out those points. We started with a charge of about 300 pounds in a retort 15 by 26 by 9, and I don't think that anyone ever had more trouble with standpipes and all the other kindred ills than I have had, so I immediately went to work to see what was wrong. I tried large charges, to see whether I could cool down the gas, but found the larger the charge the less trouble we had along these lines (the same exactly as advocated in the paper), so that to-day we are charging 375 pounds, or only 5 pounds less than Mr. Hartman charges in his 16 by 28 by 9. As we are running 15 by 26 by 9, you can very easily calculate the difference in area for carbonizing between 16 by 28 and 15 by 26, and see that our retorts are fuller by quite a little than Mr. Hartman's; but his idea is perfectly correct. The nearer you can get those retorts full, the less trouble you are going to have with lampblack, naphthaline and tar in standpipes. When it comes to the hydraulic main, I would like to add that if it is possible to change the shape of a hydraulic main so that the lampblack should be allowed to pass out back, where large hand-holes could be utilized in taking it out, a great deal of trouble in the standpipes through the backing up of the gas upon the retorts could be done away with. At least I would suggest that from a point just below the dip-pipe that the hydraulic main would have a slanting curve to the back side, rather than to have the dip-pipe drop into the center of the circle, so that the heavy tar from the dips would gradually slip off back to the cleaning holes. What is given in regard to the old-style equalizer or overflow for the hydraulic main I can fully endorse, for only last week I took off an equalizer that we had not used for 2 years, and broke out the cast iron parts inside, leaving only the shell, and attached on 8-inch pipe for the tar overflow. The only good point about the equalizer was that it was at least 4 inches below the bottom of the hydraulic main, so that tar flowing from the main is practically at the bottom, although the slight raises between the different bench sections give us about 2½ inches to 3 inches, in all but the last bench. In connection with this I would like to bring up the subject of the double overflow; that is, to use one overflow for the hydraulic liquor, the other for the tar. This is mentioned in connection with seals of ½ to 1 inch. We are doing things differently in my works than in some other places, following the ideas that we have seen at various times. I am now using only $\frac{1}{16}$-inch seals upon the dip-pipes, and have run for weeks at a time with the water just at the mouth of the dip-pipe. Our conditions are a little bit peculiar. We have a long hydraulic main, with 6 benches in the stack, using 3 benches at one end, and the gas travels the entire length of the main, then through 150 feet of foul main before it gets to the other pieces of the apparatus. The friction on gas moving that far we have found amounts to $\frac{1}{16}$ of an inch; that is, when carrying $\frac{1}{16}$ of an inch suction on the exhauster we will still be carrying no suction on the mouth of our dip-pipes. Therefore, I carry the seal just to the dip-pipe, and the exhauster is running perfectly level with no suction at all: and I have never had better success in the candle power produced than with this way of operating benches. As to the fluctuation of the seal, we obviated that by using a little contrivance which will almost entirely eliminate this fluctuation. Of course, if you are carrying $\frac{1}{16}$ of an inch dip, as the gas bubbles through this liquor, there is always a movement of the water on top. I took the opening on the side of this hydraulic seal box which was flat, at exactly ¼ of an inch below the level of the dip-pipes inside, so that the surface of the liquor above the opening may be in motion and liquor passing through a 2-inch



opening is not agitated to any great amount. The liquor passes into a small cast iron box, 6 inches by 7 inches by 12 inches, with a dam-plate from top to within 3 inches of the bottom, directly across the path of the liquor and solid with the sides of the box. This sheet causes the liquor to flow down and under, making a 6-inch seal which again has the effect of stopping the vibrations of the surface. On the side of the box opposite to the inlet, an outlet opening is made ¼ inch below the level of the inlet opening which seals the outlet and again breaks up the vibrating. This outlet is a 1-inch pipe which can be raised or lowered to produce the required level in the mains. This device practically eliminates fluctuation in the main, is not bothered with tar, and when the exhauster is running at level gauge, no air is taken in through the open mouthpieces. The beauty of this system is that you have no back pressure upon your retort while the gas is being made, which brings out the idea so well given by Mr. Hartman, that, if you have no pressure at all, and the gas passes out freely, and does not come in contact with the hot surface, your candle power is higher on account of carrying higher hydrocarbon, and the retort is doing better work with less trouble. So that I think we have solved this problem of the fluctuating main for our works. In regard to the exhausters being set so that they will carry an even pressure, I am certainly fortunate. I have a gauge attached wide open on my exhauster, the width of the line of which would not be as wide as that which a blunt lead pencil would make on passing it over paper, simply following the circle of the chart. All you have to do to satisfy yourself that it is working properly is to speed up your exhauster a little, and you will see the pen move. We have been very fortunate along this line, and it is one reason for keeping the seal so very low, with such good results.

Mr. Rice—Will you tell us why others have had so much trouble with the fluctuating level, and what the exact difference is.

Mr. Rhoades—The trouble with a double-overflow coming directly from the hydraulic main and the outer tank, as given by Mr. Hartman, I think you will find is this. You have tar displacement, and the water displaced by tar will rise and give you a certain level through your main. Suppose your exhauster should from any cause stop, that would at once put the pressure upon your main and throw out more or less of the liquor. This lowers the level of the main when it settles back as the exhauster takes off the load. If you are not pumping liquor through the main you must depend on condensation to make up this loss, which requires time and gives a changing seal for a considerable period, which is always to be avoided. Fresh charges going in, when a deep seal is carried, will produce this extra overflow before the exhauster can adjust itself. The low seal relieves this, for the exhauster will take the load at once, not being burdened with the added load of the seal. Along with our overflow system, I have conditions which will allow the pumping of liquor from the ammonia well to a tank placed on top of the primary scrubber, or at a height of about 30 feet. A lead from this tank goes to the top of the tee leading into the tar tank. A valve on this line is cracked so as to allow about ¼-inch stream of water to flow continually. This will replace the lost liquor and adjust the seal quickly. We had trouble when we were carrying ¼-inch seals, just the same as others, when heavy charges were put in and the gas was coming out rapidly; bubbling from this cause producing fluctuation of the seal, as it churned from one end of the main to the other, so great that I have seen it churn out through the overflow, the full size of a 2-inch pipe. The device mentioned will overcome this. As to leveling the main. No one thing will give the superintendent of the retort house trouble as quickly as to have the dip-pipes of the entire set of benches of different lengths. They may have been placed all right at first, but when you have ¼-inch seal on one or two dips, and have gas coming back on others down the line, you may be very sure you will get little or no gas from those that are sealed and draw air in at the others. We had a condition which would not allow us to level the main, as it stood. It is an old cast iron main, badly sagged, and in such condition that we were afraid to jack it up to make it level. In order to level up the dip-pipes I simply bored a hole in the side of the main which would bring the water within 1½ inches of the bottom of the dip-pipes, shut off the benches entirely, stopped making gas—of course, we had the water gas machines to fall back on—took out all the dip-pipes, and, when the water was level, measured the distance from the shoulder on the hydraulic main to the water, and brought all of the dip-pipes to the same level. Since then we have had no trouble at all. There is more than one way of getting out of difficulty. If you cannot do it one way you can another. On the subject of cleaning fires or clinkering, I cannot quite agree with Mr. Hartman, when he says that he can let his coke fires go along 3 or 4 days without clinkering. That may be all right for 9's—as I said before, there is a difference in operation between 9's and 6's—but if you are carbonizing 375 pounds of coal, you must have every particle of energy that you can crowd into that bench almost up to the refractory limit of the fireclay material, and you are bound to make clinkers in the firebox. Now we have tried to let it go over 2 days, and in every case we have pulled out every bit of fire in the firebox, the clinkers were so thick; so I insist that my men clean their fires twice a day, each man cleaning on his own shift, and breaking up the fires in between. In this way we do not have the trouble of the clinkers forming so as to preclude the passage of the air through the firebox, but we do have a good hot fire from the grates to the top.

Mr. Rice—Mr. Hartman speaks of recuperation and makes the statement that it pays. This is, of course, old; but it can well be emphasized. The benches at Joliet which Mr. Hartman has charge of carbonize 10 tons of coal each per day, and a difference of 1 pound of fuel for each 100 pounds of coal carbonized means in 3 years (which may be taken as the average life of a setting) 110,000 pounds of coke for each bench, which, at $4 a ton, is $440. Now, if we assume 17 pounds of coke per 100 pounds of coal carbonized as a fair result for half-depth benches, and 14 pounds as a fair result for full-depth benches (and the benches at Joliet run on 14 pounds), we have a difference of 3 pounds, and this means $1,320 per bench in 3 years, and if the benches run longer than 3 years between fillings, it is still more money. This sum of $1,320 is nearly twice the cost of refilling a bench of 9's from the top of the recuperators, and is more than the cost of refilling from the top of the ashpan. Calculations of this sort should also be carefully borne in mind in connection with any contracts for bench building in which, as is very proper, an efficiency clause may be inserted. It should always be remembered how much money a difference of 1 pound of fuel per 100 pounds of coal carbonized will make. No man who has made a contract for a bench should pay for that bench until the efficiency clause has been fulfilled, otherwise he will throw away a large percentage of the cost of the entire contract in case the efficiency is not there.

The President—I will ask Mr. Whipple to contribute to this discussion.

Mr. Whipple—The ground has been so thoroughly covered by the other speakers that I haven't very much to say. This certainly is a paper which can be used as a primer for retort house foremen, and I think we will all put copies in the hands of our foremen. I think Mr. Hartman is in favor of 9's almost entirely. Now, there may be places in this State where 6's or 7's may be a better unit than 9's, especially if your increase for one year is only 50,000 or 60,000 feet. In that case you are putting in a small charge in a large retort, and you would have to cut down your heat in order not to overheat your charge. Coming to vertical retorts, I don't know as the vertical retort has been proved to be an unqualified success. I believe Mr. Earnshaw, in 1901, read a paper on retort house practice, in which he went through the practices of having large charges in the retort, putting in something like 500 or 600 pounds, and tried to burn that out in 5 hours. The result was that he had as much lampblack and naphthaline in his standpipes and hydraulic main as he did with a smaller retort. Finally he got down to 400 pounds in 4 hours, so that he did have some space over his charges.

The President—I would like to ask Mr. Russell to join in the discussion.

Mr. Russell—Mr. President, as the other gentlemen remarked, the paper is so full, complete, concise and to the point that very little room is left for discussion or criticism or anything else. As Mr. Whipple says, I think every gas company should put this paper in the hands of its foremen, and when that paper wears out, as it should very shortly by continuous reading, give them another. I will have to talk, not from a technical standpoint or as a gas man, but from the standpoint of the bench designer and constructor. Of course, it is hardly worth while going over again the fact that material must be excellent and that the design of bench must be good and materials must be very well placed in the benches. There is a tendency, however, on the part of many men in making contracts—and this does not only apply to people who are purchasing supplies for gas companies—to assume that when they make a contract the purchaser has relieved himself of all responsibility. Of course, the purchaser wants the very lowest price. That is the first proposition. To get a low price a constructor cannot always, and especially in a small installation, afford to send a well-trained engineer to superintend the work of putting in gas benches. It should be the duty of the manager, or superintendent, or whoever may be in charge, to carefully watch the masons who are installing the benches, not because the contracting company desires in any way to have the work slighted or cheapened by having it put in rapidly, not because it may not select, or always be able to obtain, the very best men, but it is frequently the case that masons who go out are anxious to get home for some reasons, and will rush the work despite the absolute instructions of the contractor to the contrary. The point Mr. Rhoades made, of having a piece cut from a block, so that a solid piece of material could be put in instead of having a large joint, is very pertinent. There is absolutely no excuse for large joints in firebrick work. They should not be permitted, and there is never any desire by any bench constructor to permit this to be done, because it is sure to redound to the discredit of the bench and the constructing company; but this must be watched by the purchaser, unless, of course, the contract is sufficiently large to permit of the contractor supplying an engineer or superintendent, who will watch it. As to the design of hydraulic mains which Mr. Rhoades brought up, I will state that many designs have been made to do just as he suggested; in other words, that slope backward. It has been found, however, that, when pitch is made, it is made in the retort, and when it is deposited, if it is pitch, it won't slide. A main, of course, should be designed so that all parts can be reached easily and readily through openings or clearing pockets at the back. If the material deposited is not pitch it will flow to the end as well as to the rear. This is facilitated by pumping a stream of water through the main or, preferably, liquor. Many gas engineers demand that each section of main over each bench shall be separate from the other. It is, therefore, very difficult in such instances to take off the tar properly from each section, as must be done by a pipe system, and this is never in my opinion good practice. If it is advisable to have each section of the main separate, as far as the taking off of the gas is concerned, that is easily accomplished by putting in a division plate extending from the top down to say an inch below the bottom of the dip-pipes, possibly 1½ inches, so as to leave plenty of space below, thereby taking your gas off of each section, the tar passing off at the bottom. The liquor seal would be maintained at proper level by off-take device. We have found that this appeals to many gas men who desire to have the gas taken off each section, and still not interfere with putting on displacement tank arrangements. The main difficulty with the contractor is to persuade the gas company to pay a sufficient amount to have the proper kind of benches constructed and ironwork supplied. These displacement tank arrangements are to a degree expensive. The proper kind of mains and the proper attachments or clearing pockets are also expensive, and when the board of directors of a gas company say, "You can have so much money for your extensions," the manager has to get down and cut his cloth accordingly, which very frequently prevents a manager or engineer from doing things that he would like to do and things that should be done, and also prevents the contractor, of course, from supplying it. In reference to Mr. Rhoades' remark, as to the difference between his system of clinkering or cleaning fires and that of Mr. Hartman, the difference between them is only on account of the depth of the furnaces.

M·. Rhoades—That is the trouble. One stack has 6-foot fires, the other three.

Mr. Russell—Therefore, of course, you have to use different practice for the different benches that you are using. There is no question but a full-depth bench is much the better. A so-called ¾-depth bench is an improvement over a ½-depth, but a ½-depth has been a life saver to the small gas maker. It would have been impossible for many of the small works to put in full-depth benches, because it would have necessitated the alteration or the rebuilding of retort houses, which would have cost so much money they could not have afforded to do it, so the ½-depth bench has been a wonderful success, looking at it from this standpoint of view. I think there has been a great deal of misconception as to what a recuperator bench is. Many people will tell you they have ½-depth or full-depth or ¾-depth benches, whereas it may be only in the height of the floor level, and when you examine the bench you will find that really in some instances it has practically no recuperation whatsoever. Of course, it is advisable to put in as much recuperation as is possible in a given space, as it all helps, not only in the reduction of fuel, but enables one to carry a higher and more even heat. I do not think of anything else I could say, except to advise every gas man to put this paper in the hands of his foreman.

Mr. Cowdery—Mr. Chairman, it had not been my purpose to enter into this discussion, but one thought has come to me as I sat here that has not been touched upon. A few weeks ago a remark was made to me by Mr. H. A. Carpenter, President of the Riter-Conley Company, of Pittsburgh, which astonished me greatly, and I am simply going to repeat it, thinking perhaps it would interest these gentlemen, and perhaps open up a discussion in a little different line. Mr. Carpenter, as you know, has built some gas works and completed one at New Haven, Conn., I think, about two years ago. In that place he put in an appliance for the return of gases under the grate bars, and he since remarked to me that he has absolutely proved to his own satisfaction that the return of the flue gases under the grate bars would mean a saving of 25 per cent. in the fuel consumed in the bench and be an absolute preventative of clinkers. In the retort house that he is now building at Worcester, Mass., he has done away with the ashpans that have been so long used, and other arrangements for the cleaning of the benches, as something absolutely useless.

The President—Are there any others present who would like to join in the discussion? If not, we will ask Mr. Hartman to close.

Mr. Hartman—I thank the gentlemen for their kind remarks. I find I have not very much to reply to. I wish to second Mr. Rhoades' suggestion, that we need some improvement in hydraulic mains. It appears to me that hydraulic mains as now constructed are not well adapted to take care of the situation, and certainly there is room for improvement. Possibly this will work itself out gradually. Mr. Rhoades suggested the plan of pumping ammonia liquor from the well through the hydraulic main. I wish to register an objection to that method, as the hydraulic main is a fertile source of fixed ammonia, and in pumping ammonia liquor through the main we will increase the percentage of fixed ammonia in our ammonia liquor. I have tried it and found it so by analysis. Possibly this difficulty can be overcome by pumping over and over the liquor from the hydraulic main itself, and not allowing that liquor to mix with the ammonia liquor from the rest of the plant. I was rather surprised at the practice of scurfing every 3 or 4 weeks, with a seal of only $\frac{1}{16}$ of an inch on the dip pipes. It is certainly very desirable to be able to run with a seal of $\frac{1}{8}$ of an inch, but I could not expect with that seal to decompose so much of the hydrocarbon with the resultant formation of free carbon as to require scurfing so frequently, even with a charge as large as 375 pounds in a 15 by 26 retort. Reference was made to the vertical retort practice as not being on a sufficiently firm foundation to warrant our quoting results, but it appears to me that foreign engineers have given us results along this line whose value we cannot ignore. They have had vertical retorts in use long enough to establish results that are certainly to be admired; we cannot deny that there is something good there. Probably there are some mechanical difficulties which have yet to be overcome, but it certainly looks encouraging to the gas fraternity. I believe that is all.

Mr. Rhoades—After that scurfing of the retort every 4 weeks, that is not a case where we have to do that in order to get coal into the retort. We have to run our retorts up to as high as 10 weeks—in one or two instances it was nearly 3 months—but, on the other hand, we find that if we scurf about every 4 weeks we get better results from our retorts than by letting them go for a longer period. It is only a case of a difference of opinion.

Mr. Cowdery—Mr. President, I move we express the thanks of the meeting to Mr. Hartman for his paper. [Seconded and carried.]

A Greeting.

Mr. Roper—Mr. President, I would like to call attention to one of our members who has done probably as much work as anybody, one

of the pioneers who has worked hard, probably worked a little too hard, and I think it would not do any harm if this Association would give him a little time. I refer to Mr. Robb, who wired us his good wishes, and I move that the Secretary be authorized to wire Mr. Robb our congratulations and hope that his recovery will be more speedy than even our best hopes look to.

Motion duly seconded and carried and the Secretary telegraphed Mr. Robb as follows: "The Illinois Gas Association extends you its sincere congratulations on your recovery and very best wishes for your future success."

The meeting adjourned to 2:30 P.M.

FIRST DAY—AFTERNOON SESSION.

The Association reconvened pursuant to adjournment order. The President introduced Mr. D. McJunkin, of Chicago, who read a paper on

THE POINT OF VIEW IN ADVERTISING GAS.

I have no desire to "Carry coals to Newcastle"—to be guilty of anything so superfluous as telling members of this Association things about advertising which they know as well as I. Nobody here is unimpressed with the importance of advertising, or is unaware of its fruitfulness when properly done.

There is one matter, however, which, if not exactly new to anyone here, is sufficiently important to justify renewed observation and study. I call it "The point of view in gas advertising."

Now a few people, and well informed people at that, have an idea that a public utility corporation stands in a totally different position in relation to the public from that of all other advertisers. They reason in this way: "Why does a merchant or a manufacturer advertise? Because he has rivals and wants to keep up with them or outdistance them, or kill them off, according to time, place or circumstances. A, B, C and D advertise, and so must the others, down to the end of the alphabet; but a public utility corporation, which has no competition, which has a local monopoly of a commodity, does not need to advertise."

Now, of course, you know that these people are wide of the mark. You know it pays to advertise gas; that advertising results in an increased consumption of gas. You know it is a fallacy to suppose that, because you had all the gas to sell, you will sell all the gas that might be bought—if you advertised. But is this fact, namely, that more people will use gas if its advantages are properly put before them, given the importance which it deserves? Is it not the case that other matters are allowed to intrude, with the result of obscuring the proper aim and end of all advertising, which is the *selling of goods*?

For example, there is, in many large centers of population, and in many small ones too, for that matter, an openly expressed, or thinly disguised, feeling of hostility for the public utility corporation. Of course, the chief medium for its expression, if not the source of its existence, is the public press. Now, where that inimical feeling exists, it is a serious hindrance to the public utility corporation. It extends querulousness among patrons, multiplies complaints, increases touchiness and sensitiveness and grouchiness and, in no small degree, hinders the extension of sales of the particular commodity which the corporation produces.

It is not surprising, therefore, that the general manager is inclined to fear such hostility, and, as is the case with every other object of our fears, to exaggerate its proportions; but, whether that is so or not, I am sure that inimical feeling on the part of the public, or of its representative, the press, should not be allowed to determine the policy and character of the advertising which a corporation puts out. Not that it would be wise to underrate the consequences of such a feeling, not that it would be good policy to play the ostrich, stick one's head in the sand and forget all about it. Just the contrary! But I insist that such a feeling will be best met and overthrown if the corporation undertakes its publicity in the same spirit and with the same purpose as any other advertiser.

You want to make good friends of the public and the public press. Right and proper; then, *saw wood*. Act as if they were your friends. Make good gas and sell it, and go after more people to buy it. Build up confidence, just as any great manufacturer or retail establishment creates the goodwill of the public, that prestige which is so important an asset of its business.

In the first place, by direct advertising with a purely plain purpose, you will best effect the education of the public and the press, thereby eradicating any popular prejudice which may exist against your corporation. Publicity creates confidence; silence breeds distrust.

A striking illustration of how silence on the part of a corporation will give life to prejudicial rumors and unmerited hostility lately came to my attention. In a certain large city the street railway company was assailed by the newspapers for the antiquated and inadequate character of its cars. The newspapers raised a prolonged storm of objurgation, and the nature of their comments was such as to give origin to a deep and wide feeling of prejudice against the company. Lasting harm was probably done by the newspapers in *their* campaign of education; meanwhile the company kept silence. Yet, what were the facts? The facts were that, months before this storm of public disapproval was raised, the company had contracts made with car manufacturers for an adequate supply of thoroughly up-to-date rolling stock; *and yet the company kept silent*. Surely that was inexpressibly foolish. This was no time, if there is ever any time, for assuming an attitude of offended dignity. Had the company realized the value of advertising, the fact of new equipment being in course of construction would have come out naturally, simply as a bit of information, in plenty of time to forestall the newspapers' rumpus and all the harm it did in the way of prejudicing the public against the company. It would have prevented trouble to mention the facts when the storm broke, but it would have been infinitely better if a feeling of confidence in the company had been fostered by the publication of the facts at the proper time.

Advertising by a corporation (commercial advertising) means that the commodity it furnishes is offered on a legitimate trade basis. A merchant may mark his goods at a profit which would make the profits of a public utility corporation fade into insignificance, but if he advertises he is simply doing a legitimate, straightforward business. That is the way the public reasons. They have been *educated* to reason in that way.

Now, in the education of the public there is nothing more effective than intelligent advertising of methods and service. Every vital matter that concerns the customer (the potential customer as well as the actual) should find its way into the company's advertising. You have to accustom the public to look on your proposition from the like point of view of the proposition of any other advertiser.

As for the public press, its silence with regard to a corporation's affairs may be as beneficial as favorable utterances, and its silence, though it may not be bought, is influenced by the character of the company's advertising, but not by the mere fact that the company advertises in its columns. It must be led to respect the public utility corporation in the same way that it respects any other advertiser in its columns. Its comments will not be fettered, but their tone will not be of that disagreeably suggestive and insinuating kind which sometimes finds its way into editorial utterances, when the editors should know, and really do know, better. The fact is that many newspapers have to cater to the public feeling which they themselves created. To force them to recede from that position it is only necessary to advertise intelligently and straightforwardly on a commercial basis.

Besides the education of the public and the public press, another useful kind of informative work is performed by the public utility corporation in its advertising. That is the education of its employees. The regular advertising, setting forth the motives, methods and service of the corporation, will serve as a kind of mental drill for employees, informing them as to their proper attitude in their dealings with the public.

The point to aim at in gas advertising is simply "Increased selling of gas." Ignore in your advertising (though, of course, don't forget it in your policy) any possible feeling of hostility. Sell more gas. Sell more gas by advertising. If you do that, you will build up confidence, prestige, which no attacks of demagogue or newspaper can overthrow. How does that come? Because you can sell more gas only by giving the public a "square deal." Increased business is the proof of a "square deal" and the foundation of public confidence. In selling more gas, advertising is, as you know well, a powerful, maybe the most powerful, factor. Its character is inevitably taken as an index of the character of the service back of it. A big retail establishment reflects in its announcements to the public the motives of its manager, the characteristics of its service; and there is not the smallest difference in this respect between the retail establishment and the public utility corporation. From this consideration we may deduce some general truths to guide us in the preparation of gas advertising; but before discussing these I would like to dissipate a doubt which may possibly exist with regard to the influence of straightforward business advertising in removing inimical feeling on the part of the public or the public press.

Assume that the public utility corporation is putting out a line of attractive, live, convincing advertising, backed up by quality of product and effectiveness of service, for, of course, without the latter it would be impossible for a Daniel Webster to write copy that would do any good. How does all this affect public sentiment and the newspaper?

The reputable newspaper does not *favor* its advertising clientele. It cannot afford to favor them; it cannot afford even the *suspicion* of favoring them. Like Cæsar's wife, the newspaper must be above suspicion; but, though it will not, cannot, *favor* them, it may *respect* them; and this feeling of respect will be manifested by reticence, where reticence is possible, and by the tone of its references to the advertiser about whom references must be made. The position of the public utility corporation is, as I have said, precisely the same as that of the big retail establishment. The kind of advertising which will win the respect of the newspaper and all the favors (not favoritism) in its power to bestow, is the kind which goes after business enthusiastically, intelligently, efficiently. You can't throw "any old kind" of advertising to a newspaper and expect it to have a good influence. The newspaper *must* resent that as a "sop to Cerberus."

Granted, then, that the point of view in gas advertising is the getting of more business by the right sort of publicity, backed by the right sort of service, what can be determined regarding the character of the advertising? I would like to say a word or two on these points: 1, the tone; 2, the form of the appeal; 3, the amount of the advertising.

First, regarding the tone of the advertising. A good deal of gas advertising in the past has been of the (alleged) humorous variety. The propriety of this may well be questioned. Consider this. It is women who are directly addressed in by far the largest part of gas advertising. I will not ask whether women are deficient in a sense of humor or in appreciation of it. I simply ask, "Are women, when in buying mood, seriously minded; or are they not?" Those who have had opportunities to study the attitude of women at a bargain counter may perceive something humorous in the situation, but certainly will not observe any perception of that humor on the part of the women themselves. On the contrary, they will observe nothing but the most serious absorption in the question of value and price. I doubt very much if humor is suitable for any kind of advertising—certainly, comical stunts are out of place. With nearly everybody (with women, almost universally) the buying mood is a serious one.

The tone of gas advertising should be serious, enthusiastic and full of conviction. So much we may set down as in accordance with human nature and the gathered up results of years of advertising experience.

Second, what about the form of the appeal? I say nothing about the facts, for there will be little difference of opinion on that point. What I am getting at is this: Can we lay down any positive rule for guidance regarding the form (the appearance) which will give the facts their full value, or even add to it? Remembering that it is women to whom the appeal is made in 9 cases out of 10, does that fact give us any hint as to the form of the advertising? It suggests that the appeal should be made pleasing to the eye and deal with the things in which women are keenly interested. In other words, the illustration (and the illustration is needed in at least two "ads." out of three) should be attractive to the eye and concern some phase of the domesticity which is in mind when the uses of gas are being exploited. I am inclined to think that in gas advertising the illustration is at least half the battle; but by the form of the appeal I mean more than this. Experience proves that the type display in an "ad." is an important factor in its effectiveness. This is too purely a technical matter to discuss here, but I want to say that we can hardly overestimate the importance of it in the preparation of the advertisement.

Third, a word or two regarding amount of advertising. This is a subject of supreme difficulty in all kinds of advertising. The big merchant who uses several pages a week is constantly wondering whether the same results might not have been achieved by half the amount. The circumstances of each case must decide the main question—the size of the appropriation and the amount of advertising that can be done; but I may throw out one or two hints which are of general application. If an appropriation is small, it is better to limit the size of the "ads." than to interrupt their continuity. A big splurge at long intervals is far less effective than a modest amount of advertising which keeps your business constantly before the public. It is the constant dropping of water that wears away the stone. Of course, the size of the "ad." must be such as to prevent its burial, but it is wonderful how the arts of illustration and type display can make a comparatively small space prominent and compelling to the reader's eye. In connection with this question of amount of advertising it may be asked, "How shall we distribute copy among competing newspapers in town?" Shall we spend an equal amount of money in buying space in each?" Would not that seem the fairest method? We shall find the correct answer in the point of view for which I have been arguing. Your aim being to produce more business, not to subsidize the newspaper, you will naturally buy space on the same principle as other advertisers. Wishing to approach every family in the community, you will naturally use every medium by which you can reach them. Every medium; but not the same expenditure on each. Cost is determined by circulation. You reach the smaller number of one paper's readers at a proportionately smaller cost than you do the larger number of another paper's readers. That is the theory at least, and practice roughly approximates it. By using the same space in every paper you act fairly and get results like any other advertiser.

Summing up the suggestions I have made, I would advise that gas advertising should stick closely by the "Selling of goods," should be serious in tone, informative and enthusiastic, and should be so planned as to keep the business of the corporation constantly in the public mind. Assuming that a "square deal" is given *to* the public, such advertising is the surest means of receiving a "square deal" *from* the public and the public press.

Discussion.

The President—Gentlemen, Mr. McJunkin has given us a very interesting talk on a very interesting subject, and I hope it will bring out a full discussion. I will ask Mr. John D. C. Clark to lead in the discussion if he will kindly do so.

Mr. Clark—Mr. President, as far as the point of view in advertising is concerned, I think Mr. McJunkin has had considerable experience, although he doesn't acknowledge it. He is advertising man for the "Commonwealth Edison Company," and, of course, he has both sides, so he must know all the points of advertising gas. One exceptionally good point that he brings out is the educational value of advertising, not only to the general public but to the newspapers and employees. I repeat that that point is exceptionally good. I think the first thing in advertising of any description is information, for if everybody knew as much about gas as all the gas men do, there wouldn't be any question but that everybody would use gas.

Mr. Vincent—I am not connected with the commercial end of my gas company. I am, however, engineer of the Des Moines Gas Company; but I do take a keen interest in the commercial end as well as the technical end. I have always taken it that there are two functions of advertising by public service corporations. One is to encourage a friendly feeling in the local press, the other to bring your goods before the public; and I think those things in our business have about equal weight. Several of the points brought out here are extremely interesting and very pertinent, but it is a question in my mind if you can give a good deal of information in newspaper advertising; whether it is not better to simply have a display to attract attention to your goods and let it go at that. I venture to say that 90 per cent. of the readers of the morning newspapers will not read such matter in advertising. They will look at the headlines and nothing further. We had a rather interesting experience in Des Moines last year in showing the value of press advertising. After investigation we decided to push a new type of inverted lamp for lighting purposes, and determined to get it before the public as rapidly as possible. To do that we sent solicitors out with the lamps to show them to consumers, and started a campaign of advertising extending through about 1 week, using half page "ads." in three of the newspapers. We set one day to sell these lamps at a reduced price. The price advertised was the regular price of the lamp; the price that the salesmen gave was the regular price of the lamp. On that day we sold 991 lamps, mostly due to newspaper advertising, because obviously the solicitors could reach only a very small percentage of the town. I think, to make your your advertising pay, in the first place you must have a good thing at a good price. People don't care anything about paying something. They, however, want to get something, they want to see something new and striking, and the advertising done by most gas companies, I think, does not reach the consumer as well as a display of the goods will.

Mr. Strohn—I have listened to the speakers and I cannot say much more than has been said, only I believe in the display part of the advertising much more than in the wording. As Mr. Vincent said, the thing people want is something good and new. I think another system of advertising that is very good is the printing of new features

and sending them out by mail, some special new stove, for instance. I have had some success with a new stove of the cabinet type, in selecting some old consumers whose stoves are about to wear out and sending cuts and descriptions of these goods to them. The ordinary advertising that most gas men put in the newspapers is for the purpose of keeping on the good side of the papers, but we in the smaller towns hesitate somewhat on full page or half-page "ads."

The President—We would like to have Mr. Whipple contribute something to the discussion.

Mr. Whipple—I did not expect to be called upon to discuss this paper, so I have not prepared myself. I have had experience in printing full-page, half-page, and all sizes, and I believe myself in an "ad." of about from 2 to 3 columns wide and about 8 or 9 inches long is about as good an advertisement in size as you can use. I believe you can take an advertisement that is fairly printed, dress it up in large type, and do more with it than you can to let it run in small type. I think also that display "ads." are good, but I am one of those who think that the public also read their "ads.," and I think if you should make a mistake in the price of stuff that you were selling at one time, you would find a great many people would read that "ad.," and come in and get the lower rate. I think myself that advertising pays. I know it does in our town.

The President—We would like to hear from Mr. Draper,

Mr. Draper—Mr. President, I have had some little experience in demonstrating the efficiency and economy of gas appliances for gas companies which surely brought good results. I believe in general advertising, for I am especially in favor of showing the people what we have. Wherever there is a new lamp or gas range, or whatever it may be, I believe that the best way to demonstrate the efficiency of the appliance is by showing it to the consumer and proving its efficiency.

Mr. Goodnow—There are several methods of advertising which have not been touched upon, especially billboard advertising and electric light display advertising, on which I would like to hear from the different members; and I would like to mention a little method of solicitation which was proposed to me by our competitors the other day, and I admired their enterprise. Where I live we have no electric annex to our business, and our competitors thought it would be an excellent plan if, when we got our new gasholder, which we are starting to erect, completed, we should put an electric sign on top of it "Cook with gas." I am considering that now. I have not turned it down, but I admired the enterprise of the other fellows. I think Mr. Case might give us some little information in regard to that, as his experience has been pretty wide.

Mr. Case—Mr. President, I have not the extreme pleasure to be a member of the Illinois Gas Association, inasmuch as my business covers a very wide area of the United States, and I am afraid that if I were a member of each individual State Association in which I do business that it would require more than my salary to pay my dues. I am, perhaps, not quite as strong an exponent of newspaper advertising as some. During some years of specializing in the gas business in the way of placing different appliances, etc., I tried newspaper advertising as I have tried other methods. I will say that for my management of a business which dealt with people who were already consumers, that advertising attached to the bill invariably produced greater results than newspaper advertising; so in any advertising that deals with the consumer himself, I advocate the advertisement attached to the bill. But I have also found that where this method has been too generally adopted the people have become so used to anticipate the trifling advertisements attached to the bill perhaps each month in succession that, when you have a really good thing to advertise, the effect of it is lost in the people having become accustomed to these trifling matters, and not reading the advertisements at all that are attached to the bills. This I have made a special effort to determine and found it is the case. Then, too, I have become convinced that the same amount of money invested in a manner that will promise a chance of personal gain to the consumer is much more efficient. For instance, with some of our plants we have recently instituted the habit of giving prizes to one lady of each household along our line of homes, who did not own or use a range at the time of the application; she thus was entitled to a chance on this gas range, if if she would bring into our offlce with her name and address a card which our solicitors had distributed. This we found was a means of creating an interest in gas ranges, perhaps much earlier than would otherwise have been the case; that is, had it been left to their own volition to begin to think of gas. Our solicitors made a preliminary canvass. Frequently they would find people not using gas ranges, and these cards were left, and almost without exception, regardless of financial or social standing, the ladies in all these houses were interested enough or were perhaps anxious enough to get something for nothing, that they brought in these cards to our office. That enabled us perhaps to demonstrate to people who had never seen a gas range what it was. Through the delivery of these cards, which read and stated positively: "I do not own or use a gas range at present, but I would like to," we had several hundred prospects within the first month of our canvass. I think that is about all I have to say on the question of advertising.

Mr. Bigelow—Mr. President, may I say a word on the matter of newspaper advertising. During the 20 years prior to my coming into the gas field, I made a specialty of taking concerns that were somewhat run down at the heel, not necessarily because of lack of money, but because they were not making money, and that wanted plans devised to promote their interests. I had such an experience with a type foundry, and one plan adopted may suggest a valuable thought to you in connection with your display advertising. I went to the advertising manager of John Wanamaker, of Gimbel Brothers, and to the advertising manager of another large concern in Philadelphia; then I went to New York and saw two or three of the advertising managers of large department houses there, and suggested to them that we would design for each a special style of type. That we would sell these faces of type to the papers for use in their "ads." only, so that the advertisement that appeared in each morning paper or afternoon paper for John Wanamaker, would have a type which was purely John Wanamaker's type, distinctive in design. Gimbel Brothers the same in their case, and the others the same in theirs. Each department store at once grasped at the idea as promising a specialty in advertising that was to cost them nothing extra. The purpose was to have each newspaper buy the type, the advertising managers instructing the newspapers where they could buy those patented faces. It was found that there is virtue in using the same style of type each day when it comes to the matter of display lines in one's advertisements. I would suggest that if you can, you get your local papers—and it won't cost them much—to select from the faces of some type foundry a special face, distinctive in its characteristics, then use that only for your advertising. That is one point I wanted to give you. John Wanamaker, or rather his advertising manager, was the first to write the "conversational style" of advertisement, which resulted in greatly added sales for John Wanamaker. This plan was copied by other department store people until gradually the advertising columns of the papers contained much "conversational" advertising matter. It took with the women, and the women are the people that you are after, gentlemen, to a very large extent, and the conversational idea is a winning idea. I believe for the women you can say a great deal more in your advertisements than you can for the men. Another institution that several years ago I took to develop, was one publishing a journal, similar to the *Ladies' Home Journal*, the *Woman's Home Companion*, etc. There we found that for women—and it was for women we were issuing that publication—the length of the advertisement, the explicit way in which we went into the details, did not hinder the reading; in fact, they were more apt to read those advertisements that offered them a considerable amount of detail than those that were solely of the display character. Of course, there were display lines in all of our advertising matter, but our premium advertisements that went into details called out far more subscriptions than the advertisements that were purely in display form. We tried both ways, and we were, as you are, dealing largely with women. I speak of these two points, viz., special faces of type and details in advertisements for housewives, as having come to my notice.

The President—Mr. McJunkin, we would be glad to have you close the discussion if you care to.

Mr. McJunkin—Mr. President, I believe I have nothing further to say. I feel as though I had said all that I had to say in reading my paper and in criticising a little bit the advertising that I had before me and stating what I thought was good advertising. I have not said anything about billboard advertising, but I do think that it is effective if properly handled. It has to be of a nature that he who runs may read it.

On motion of Mr. Whipple a hearty vote of thanks was tendered to Mr. McJunkin for his paper.

[To be Continued.]

THE new plant of the Mohawk Gas Company, on Villa Road, Schenectady, N. Y., is to all intent completed.

Perils and Pleasures of the Meter Man.

[Prepared for the JOURNAL by "R."]

It is always interesting to converse with meter men, with a view to learning something about their singular experiences. One of them told me that, when he engaged himself out as a meter taker, he imagined it was a peaceful, easy, quiet and clean job. He had no idea of what the situation really was, but being out of a position and wanting employment, he applied at several machine shops and wood working establishments. Having worked at pipe fitting in his day, he was somewhat familiar with mechanical things; therefore, when he applied to the office of a gas works – he was hired at $21 per week as a meter taker – he did not know exactly what the work was. He was told to report next day, and in due time he appeared on the scene in readiness to do his duty. Of course, a meter man ought to appear well. In fact, any manufacturing or industrial company which sends out men among the people takes pride in the general appearance of its representatives. A collecting agent should be fairly well dressed, neat and polite; and practically the same thoughts are applicable to the meter taker. He is not only expected to be a man capable of doing mechanical work on a defective meter, but is supposed to possess enough knowledge of human nature to deal politely with the patrons of the company. He often must smooth the fur of the ruffled gas users, and in order to do this he must appear well.

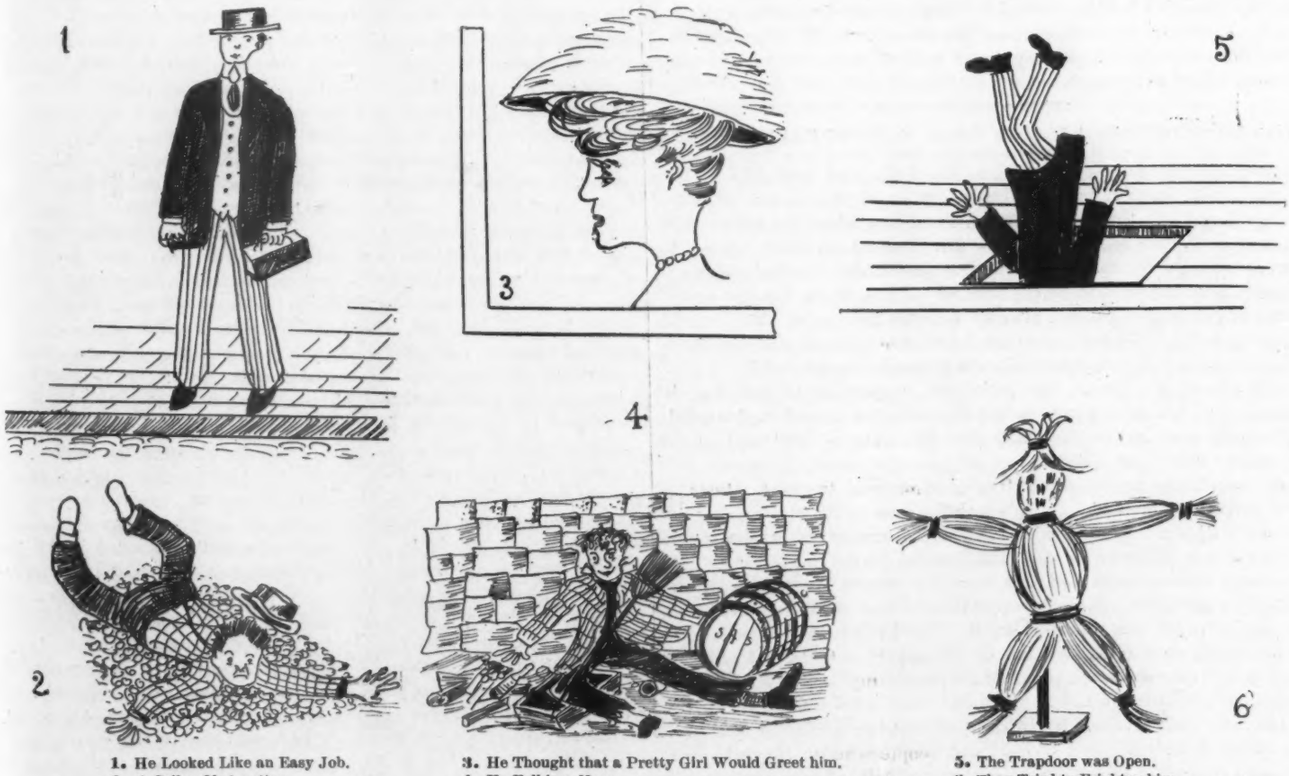
Shabby clothes with fringed trouser bottoms won't do in these modern days. Perhaps white polished cuffs and collars are not amiss, and a neat tie and hat help out. The housewife and the servant girl are impressed by the gentlemanly meter taker, whereas they might get ruffled at the trampish individual. Consequently when our man, whom we will call "Smith," showed up at the office, neatly trimmed from top to bottom, he made a good impression with the superintendent. "Smith" was sent to the instruction department to get his lessons in meter taking and fur smoothing. He was shown how to take a meter apart and put it together. He was instructed as to the best methods of explaining things to inquisitive men and women. He was given lessons in warding off attacks from angry persons who were dissatisfied with the registering of their meters. He was told how people kick and often kick hard. He was informed he need not mind a few verbal or physical kicks—that it was a part of his business to be kicked out; but "Smith" thought that the boss was joking, so "Smith" smiled.

A week was devoted to getting "Smith" into order for taking meters. He felt he knew it all and started out. In the very first house the welcome was not what "Smith" thought it ought to be. The women folks were washing and they did not want to be bothered with gas men. They were unchristianlike in their talk. They made remarks about the overflow of gas and the height to which the figures and prices had climbed. "Smith" explained the "other man" was on then, but the "other man" was not present, so the women took it out of the man who was.

They did not exactly injure him physically, but they jarred his feelings. He felt hurt. It seemed to "Smith" that he must be doing something wrong to go out taking meters. However, the women folks finally let "Smith" go to the basement to see the meter. The place was dark. The women refused to give him a light. They would not tell him in what part of the cellar the meter was placed. They banged the door when "Smith" got down, and "Smith" removed his coat to keep it clean, then fell over the coal, blackening his linen and shocking his system to the extent of cursing some. Then he lighted matches, for he had neglected to carry his electrical pocket light. "Smith" got the readings and went out through the coal window. He afterwards learned that the women got scared when he did not come up and went out and got a policeman to investigate. The policeman found no one in the cellar and gave the women the laugh.

"Smith" passed on. He did not look quite so natty now. He saw that some mistakes had been made. However, he had grit in his make-up and grit in his clothes from the cellar refuse. So on he pressed, a mile behind his schedule time, on the district he was to cover. He saw a pretty face in the window and he remembered that one of the men in the shop said that meter takers were frequently entertained most loyally by the pretty girls of the house when the elder persons were out. "Smith" hoped there might be a bright spark somewhere. He was shown the back cellar stairs by a colored woman who was cooking doughnuts and who had no time to point out the way to the meter. "Smith" had not been below a minute before he went rolling over an empty cider barrel onto a lot of rubbish in a heap. The cook opened the door a little wider, screamed and threw a broom at "Smith" to help things along. "Smith" again uttered swear words and proceeded to take his meter. He was getting used to having rough things said to him and to frolicking about on empty tin cans and broken bricks.

But the climax came towards the noon hour. "Smith" was way off on his beat. They told him at the job just about where he would



1. He Looked Like an Easy Job.
2. A Cellar Obstruction.
3. He Thought that a Pretty Girl Would Greet him.
4. He Fell in a Heap.
5. The Trapdoor was Open.
6. They Tried to Frighten him.

be at the dining hour. "Smith" was a considerable distance from the named point at that time with no dining place in view. Evidently the men in the shop had neglected to allow for the time which had been consumed by "Smith" in bumping about on cellar rubbish. "Smith" lost more time in looking for an eating house. He was beginning to hold the cooks *en route* in such esteem that he dared not ask a bite. His clothes were ruffled, his hands and face were soiled and he might offend the queens of the kitchen. So he rustled onward. He had to take a meter in a shop, and made the error of marking the readings in his book while hurrying along. He could not watch his feet through the book. Therefore, as a natural consequence, when an open trapdoor was confronted, "Smith's" feet continued to carry him along. No footing was found. "Smith" dove through the aperture and dropped on some bales of cotton with a thud.

Cotton is not bad stuff to fall upon. "Smith" was unhurt; but he was sore. He then proceeded. In the next place lads had fitted up a straw man to use. Hearing the meter man coming they put the thing in front of the meter and skipped. "Smith" got a shock, but did not flee. He kicked the thing over and took his readings. Finally, at about 3 o'clock, he came up to the noon hour place and ate and drank. Then he went back to the shop in a cab at his own expense. He was going to resign; but the boss said, "They all get discouraged the first day. Keep on. You are learning human nature. Try it to morrow." So "Smith" kept on. To-day he is a good meter taker, self-made, through hard experience.

The German Patent for the Bueb Vertical Retort Upheld.

According to English advices, to hand the 28th inst., the Nullity Court of the German Imperial Patent Office, sitting on the 3d February last, with Privy Councillor Dr. Thiel presiding, the other members of the Court being Councillor Dr. Wieprecht, Privy Councillor Dr. Schütt, Dr. Siermann and Dr. Burkhardt, after verbal pleadings, decided that the petition by the firm of Aug. Klönne for the annulment of patent No. 167,367, granted on the 29th July, 1903, and belonging to the Deutsche Continental Gas Gesellschaft and Dr. Bueb, of Dessau, be rejected, the costs to be borne by the plaintiff.

The Plaintiff's Case.—The petitioner, in support of his case, declared that the arrangements described in the patent had already been published in the British patent No. 5,712 of 1828, and in the American patent No. 447,506.

Especially the British patent treated of vertical, tapering retorts, in which the presence of an empty space, permitting the condensation of tar downwards, was avoided. Further, in special cases, the retorts were entirely filled with coal. The German patent No. 14,050 showed the same arrangement; in this case the retorts were, in addition, heated by the furnace gases in several superimposed sections, of which, naturally, the lowest was the hottest. The temperature of carbonization was not mentioned in either of the above patents, but with the generator firing shown in the German patent any desired temperature could have been reached. A "Kollin" coke oven was illustrated in "The New Coke Ovens," by Dürre, published in 1892. In this oven the retorts were filled full of coal and were heated in several superimposed sections. This oven is exactly the same as that described in the contested patent. Further, the advantages ascribed to the process by the patentees were attained before the introduction of the same. A gas almost free from naphthaline and fluid brown tar are the results of heavy charges, small free space in the retorts and proper heating, independent of whatever sort of retort is used. The plaintiff, in the installation built by his firm, also applies higher heats to those parts of the retorts which contain the most coal.

With regard to the question of temperatures, the petitioner said:

Again, the prescribed temperatures in the contested process did not present any new feature.

According to Herr Körting's article, published in the *Journal of Gas Lighting* in 1906, the working temperatures of the patented process are:

The average temperature of the bottom section is...	1,418° C.
The temperature of the second " ...	1,338° C.
" " " third " ...	1,040° C.

Therefore, since a considerably lower temperature is attained in the retorts than in the furnace, the retorts of the patented process are not subjected to higher heats than those in either horizontal or inclined furnaces, in which furnace temperatures even as high as 1,600° have been observed. Under these conditions, however, the temperature inside the retorts was only from 900° to 1,000° C. In support of this statement, the plaintiff handed in two letters, one sent by Dr. Pfeiffer, of Magdeburg, the other by the Gas Committee of the town of Königsburg, in Prussia; and he further referred the Court to an article by Dr. Pfeiffer, published in the *Journal für Gasbeleuchtung*, but was not able to state the date of publication. Moreover, the sub-division of the heating of the retorts into sections has been carried out in furnaces built by the plaintiff—for instance, at Offenbach and Wiesbaden. Further, since the year 1880 they had erected furnaces in which large retorts to take heavy charges were placed, in order to obtain a gas nearly free from naphthaline, and a fluid brown tar.

Finally, the petitioner said that the statement, that in the patented process a shaft through which the gas passed was formed in the coal, was no novelty; for attention was drawn to this by Hilgenstock, in an article which appeared in *Stahl und Eisen* and in the *Journal für Gasbeleuchtung*, before the patent was published. The plaintiff was asked when these articles appeared, but was unable to give further particulars.

The Potentees' Reply.—The patentees pleaded for the dismissal with costs of the plaintiff's petition. They pointed out that the patented process, which was already looked upon both at home and abroad as marking a new epoch in the gas industry, consisted of the combination of two principles, viz., the absence of a free space in the retort, and the subjection of the retort to a higher temperature than had heretofore been usual. Success would only be attained by the combination of these two principles, and then only if vertical retorts were used, for horizontal or inclined retorts could never be filled sufficiently full to prevent contact of the nascent gas with the top of the retort, and the consequent reduction of the gas and formation of naphthaline would be unavoidable. Therefore, the novelty of the patent could not be contested on the assertion that the process was merely built up of fractions of already published patents or processes. The plaintiff did not learn from publications, but from the patent No. 167,367, that gas almost free from naphthaline, and fluid brown tar, were the results of heavy charges, high heats and small free space in the retorts. None of the furnaces described in the publications quoted by the plaintiff could be used without alteration for the purpose of the patented process; the "Kollin" oven was not a gas furnace, but a coke oven. Moreover, the contested patent, No. 167,367, covered not a furnace, but a process for gas production, and that process was not mentioned in any of the publications mentioned. It was especially noteworthy that though the proprietor of the plaintiff firm declared at a meeting of the German Gas and Water Association in 1906 that the process was not feasible, yet the same firm now sought to represent the process not only as well known, but as obvious. The defendants contended that the facts affirmed in the letters handed in by the plaintiff were non-existent. They admitted, however, that temperatures as high as those mentioned in their patent had formerly occasionally been reached in the manufacture of coal gas.

Reasons for the Verdict.—The court declared unanimously in favor of the view that the contested patented process was to be regarded as a combination of various principles, for the practical application of which a special plant was necessary. The plant consisted of vertical, highly refractory retorts, in which there was no free space permitting of a condensation of tar downwards. The retorts were filled up to the top with coal, and then subjected to a higher temperature than was usual. The plaintiff's plea culminated in the assertion that it was impossible to work vertical retorts in any way other than that claimed in the patent, and that, therefore, the patented process was nothing but a return to the previously known vertical retorts. That assertion was, however, incorrect. The previously known forms of vertical retorts were either not equipped with the arrangements which were indispensable to the patented process, or they had arrangements which would prevent their use for the patented process; but, in any case, none of the publications cited by the plaintiff described the essential details of the process on which the contested patent was based. Referring to the retorts described in the British patent No. 5,712 of 1828, and in the American patent No. 447,506, the Court said:

No measures were adopted in either of these to prevent the tar from flowing between the retort and the plate on which the coal rested, down into the bottom of the retort. In the American patent there are even special pipes provided for drawing off the tar at the bottom of the retort. The retort described in the patent No. 14,050 and the "Kollin" coke oven can also not be worked according to the patented process, because, although they have no unheated space at the bottom of the retort in which tar could accumulate, yet the gas is taken off in special pipes placed parallel to the retorts and subjected to heat; but the contested patent expressly states that to obtain the wished for results it

is absolutely necessary to prevent the gas from coming into contact with heated surfaces, so that its temperature may be kept comparatively low. Further, at the time the contested patent was applied for, not only the plant necessary for the patented process, but also the methods of working mentioned in the patent, were unknown. Although there can be no doubt that the previously known types of retorts could be filled right up to the top, yet this was not done, because of the prevailing opinion that a space ought to be provided for the gas above the coal, and for the expansion of the latter during carbonization. The fact that in order to prevent the formation of naphthaline the free space must be protected from external heat is not even mentioned in any of the articles cited by the plaintiff. The knowledge that naphthaline is the result of superheating the gas in the retort was, therefore, new when the patent No. 167,367 was applied for.

The Temperature Question.—With regard to the question of temperatures, the court held that the same conclusions applied.

The retorts are to be subjected to a higher temperature (1,300° to 1,500° C.) than has heretofore been customary. As a consequence of this high temperature, the layer of coal next the retort is immediately converted into coke, and, pressing firmly against the retort, protects the gas from contact with the hot surface, also helps to conduct the heat towards the center of the retort. The plaintiff failed to quote any literature showing that gas had been produced at such high temperatures, for any definite purpose, before the application for the contested patent. It is also improbable that a higher temperature than 1,200° was ever reached, for, in an article published by the well-known expert, Dr. Drehschmidt, in Schilling's *Journal für Gasbeleuchtung* for 1906, page 678, a year after the patent had been applied for, temperatures of from 1,125° to 1,150° C. are spoken of as high; and the plaintiff himself handed the court a letter written by Dr. Pfeiffer to the proprietor of the firm of Klönne, in which it is stated that even the retorts made by the above firm distorted and broke when subjected to a temperature of only 1,280° C. Therefore, when the patent was applied for, it was not realized that high temperatures in conjunction with suitable plant had a beneficial effect upon the quality of the gas and tar. This conclusion is not affected by the fact that sometimes, either for experimental purposes or by accident, gas has been produced at high temperatures, which have reached or even exceeded those mentioned in the contested patent.

Above all (and this was the one important point in a patent embodying several principles), the Court declared that it had not been proved that the process had been anywhere described as a whole. The proof that single parts of the plant used in the practical application of the process had been known before could not lead to an annulment of the patent. That the introduction of this process represented an advance on former methods of gas making was proved by the undeniable fact that many gas works had replaced their old retorts by this system. The rest of the evidence tendered by the plaintiff was of little importance. As a process for working with large retorts and heavy charges was not part of the contested patent, it really did not matter whether such a process was in action at Offenbach and Wiesbaden before the application for the patent or not. With regard to the publications said to have been made by Drs. Pfeiffer and Hilgenstock, it was not asserted that the patented process was described in them either as a whole or in its more important details. On the contrary, according to the plaintiff, these articles only referred to single characteristics of the process. The Nullity Court, therefore, decided not to postpone their decision until further particulars as to date of publication could be brought, the more so, as the plaintiff had been allowed ample time to prepare his case.

Natural and Artificial Purifying Material.[1]

By Dr. L. J. Terneden, of Amsterdam.

More than a year has now passed since the first experiment with the Lux purifying material was instituted at the West Gas Works, Amsterdam. Though the time is short, it has nevertheless appeared already that the new purifying material is giving better results than those previously obtained when natural Dutch bog ore was employed. The author had, therefore, contemplated making a brief reference to the subject at the last meeting of the Dutch Association of Gas Engineers held at Leyden; but, on further consideration, he thought it was better to postpone dealing with the matter until more figures and experience had been collected. Now, however, he feels that the time has come to publish the results of the year's working with the new material:

It is well recognized that the varying composition of the bog ore supplied in Holland militates seriously against its successful employment on gas works. Each delivery has to be separately examined, and shows itself when in actual use sometimes better and sometimes worse than was expected. If the amount of iron present in an available form is determined analytically, uncertainty as to the actual value of the material still remains; for its efficacy in the purifier depends upon the form in which the iron is present. Indeed, the author would often rather trust to the appearance of the material as a guide to its practical value than to the results of analysis, although a mere inspection by an experienced man is nevertheless liable to deceive. Hence it follows that every delivery of bog ore requires treatment in a particular manner if the best and most economical results are to be obtained from it. The Lux purifying material is free from this defect. Certain difficulties admittedly accompany its use; but when these are understood and allowed for, the manner of treating it is always the same. In bog ore the amount of iron present, or the corresponding amount of ferric hydroxide—if it is assumed that all the metal exists in the form of $Fe_2(OH)_6$—varies very seriously. Part of it occurs in a state of impalpable powder, as well as in granules of appreciable size, while the size of the grains themselves is not always the same. The ore can be sifted so as to obtain grades of material more uniform in dimensions, and the hard lumps, which are deficient in purifying power, can be broken down by appropriate grinding. But when this is done, they still retain their bad qualities.

The irregular nature of bog ore can hardly be wondered at in view of the different beds whence it is derived and the limited supply. It is quite possible that some bog ore, having the good qualities of the material offered for sale in the past, still remains; but the supply will undoubtedly be exhausted sooner or later. The author does not care, on his own responsibility, to prophesy the date when deliveries of Dutch bog ore will no longer be obtainable; but when he made inquiries on the subject in the trade, he was told by two authorities that the ore now known to exist would only last for another 15 years. Matters are very different with the Lux purifying material. This is invariably prepared in the same manner, and if the preparation is conducted with the necessary skill, its properties are always identical. The raw material from which it is made is bauxite, a mineral known to occur in large quantities. The following analyses of three deliveries made at different times of the year may be of interest:

	Water.	Iron in the Dry Material Calculated as $Fe_2(OH)_6$.
January	57.1 per cent.	89.6 per cent.
August	56.5 "	88.7 "
December	56.1 "	90.3 "

The proportion of water is high. In bog ore it stands at about 49.7 per cent., 51.1 per cent., and 49.9 per cent. The extra amount in the Lux material, however, cannot be regarded as a disadvantage if allowance is made for it in the price.

It is not altogether an easy matter to submit figures showing, in a strictly comparable manner, the results that have been obtained at the West Gas Works at Amsterdam with the two purifying materials. The difficulty arises through the fact that 10 to 12 parcels of material are in use simultaneously, travelling backwards and forwards between the purifiers and the revivifying floors. [The author employs the word "parcel" to signify the quantity of material which is kept together as far as possible during its employment.] Hence it cannot be said with absolute precision that one particular parcel of material has purified a stated volume of gas, because different purifying vessels, and, therefore, different parcels of material, are in use at the same time. For this reason, the author prefers to give the next figures as indicating his opinion upon the relative merits of the two materials.

Lux Material.—After being used the stated number of times, different parcels of the Lux material contained the following proportions of sulphur calculated upon the dry substance:

Parcel No. 13	used once	43.2	per cent.	of sulphur.
" " ...	" twice	56.5	"	"
" 2	" once	44.4	"	"
" "	" twice	47.0	"	"
" 3 ...	" once	38.1	"	"
" "	" twice	35.9	"	"
" "	" three times	49.1	"	"
" "	" four times	54.7	"	"
" 6	" once	32.8	"	"
" 7	" once	30.5	"	"

Parcels Nos. 2 and 3 had to be taken out of the purifiers after being

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used twice, owing to their excessive absorption of pressure. The reduction in the amount of free sulphur was due to the fact that after its removal from the vessels the material caught fire. Flames rose to some height from the material, and naturally represented the loss of much sulphur, which was apparently converted into forms incapable of recovery.

Bog Ore.—The following are the corresponding figures relating to bog ore:

Parcel No. 10	used	once	20.6	per cent.	of sulphur.
" " "	"	twice	37.6	"	"
" " "	"	three times	35.6	"	"
" " 11	"	once	12.7	"	"
" " "	"	twice	16.7	"	"
" " "	"	three times	21.5	"	"
" " "	"	four times	27.1	"	"
" " "	"	five times	29.6	"	"
" " 12	"	once	9.3	"	"
" " "	"	twice	15.1	"	"
" " "	"	three times	19.0	"	"
" " "	"	four times	20.9	"	"
" " "	"	five times	23.8	"	"
" " 7	"	once	21.9	"	"
" " "	"	twice	25.7	"	"
" " "	"	three times	30.0	"	"

After the third time of using parcel No. 10, it diminished somewhat in its sulphur content. The loss, however, was to some extent only apparent, inasmuch as the proportion of blue had increased a good deal, so decreasing the figure for the sulphur. It should be understood that differences of 1 per cent. in the above figures are to be expected owing to the manner in which the samples were taken.

The general result of the tests is to show that the Lux material packs better than bog ore, even when freshly loaded into the purifying vessel; so that it reaches a higher sulphur content during its first employment. Moreover, the author has never obtained so high a final proportion of sulphur in his spent bog ore as in the spent Lux material. Very old samples of bog ore have given him such final proportions of sulphur as 40.6 per cent., 33.7 per cent., 39.4 per cent., and 36 per cent. But these were materials which had been used 6 or 7 times. At first sight, it may appear advantageous that one and the same quantity of bog ore can be used 6 or 7 times; whereas a given quantity of Lux material can only be employed 2 or 3 times. The real question on the other hand, is which material will take up more sulphur in the shorter time, thus involving as little revivification as possible, because this means a reduction in the expense of labor. In the year 1906, one purifying vessel, composed of four smaller vessels arranged in parallel, at the West Gas Works, was charged 41 times. During 1907, when, after January, one section was charged with Lux material and, after August, two sections were charged with Lux material, the purifier was refilled only 30 times. In other words, between January 1 and March 10, 1906, when only bog ore was employed, 11 purifiers required emptying and recharging at the West Gas Works; between the same dates in 1907, when the use of Lux material began, 9 purifiers had to be emptied; and between the same dates in 1908, when a larger proportion of Lux material (but still not the entire quantity) was in service, only 7 purifiers needed refilling. Hence if the use of bog ore were entirely superseded, the operations of emptying and recharging should become even less frequent than they are now.

The cost of labor for purification, including revivification during 1906, was 10,093 fl., and during 1907 was only 8,293 fl.; thus showing an economy of 1,800 fl. At the East Gas Works, where experiments with the Lux material have also been undertaken, the cost of labor for purification in 1906 was 7,670 fl., falling to 5,726 fl. in 1907. At this works, the Lux material has only been used in the catch purifiers in order to remove the last traces of sulphuretted hydrogen. It does this more perfectly than bog ore, and has therefore proved very satisfactory.

The author has also attempted to obtain an opinion upon the relative merits of the two materials in a different manner, by calculating the amount of sulphuretted hydrogen retained, from the weight of the individual parcels of material and the proportion of sulphur contained in them. The results are only approximate, inasmuch as the sulphur present in a state incapable of regeneration, and also that consumed in the production of thiocyanogen, is not allowed for. Furthermore, the quantities of gas passed through each parcel can only be estimated on the assumption that the make was divided evenly between the two sets of purifiers. This naturally is not quite correct, as a lower pressure absorption in one set would cause less than half the gas to pass through the other. The figures are as follows:

	Free Sulphur Absorbed, Kilos.	Gas Purified, Cubic Meters.	Grammes* of Sulphureted Hydrogen Removed per Cubic Meter.	No. of Days in Use.
Parcel 13 (Lux)	55,210	9,153,780	6.4	202
" 2 "	27,696	2,843,400	10.2	58
" 3 "	45,097	6,392,095	7.5	104
" 6 "	17,130	1,975,060	9.2	31
" 7 "	16,008	915,485	18.6	14
" 12 (bog ore)	26,719	4,300,925	6.6	69
" 11 "	16,600	3,963,090	4.5	62
" 7 "	25,737	3,720,515	6.9	60

*[One gramme per cubic meter is equal to 43.7 grains per 100 cubic feet.]

In the case of parcel No. 7 of the Lux material, the amount of sulphur taken up per cubic meter of gas is very high; but the figure is not impossible, as the proportion of sulphuretted hydrogen in the English coal used may reach 26 grammes. Probably, however, this is an instance where one of the two sets of purifiers was more heavily worked than the other. The results appear to the author to be rather in favor of the Lux material.

The question remains whether there are any inconveniences in the employment of the Lux material. The material is in a very fine state of subdivision. Its particles are not ground mechanically, but it is obtained in the condition stated by chemical means. This explains the very active nature of the substance, and also the extreme readiness with which it catches fire when the purifier is opened—in fact, it revivifies quickly. If, however, this peculiarity is borne in mind, no further trouble arises. During the experiments at Amsterdam, no fire has occurred while the material was in the purifier, because it was thoroughly wetted immediately the lid was taken off. Care must be taken, on the contrary, that it is not too wet when charged afresh, else its particles may stick together and establish a high pressure absorption. At the present time some tests are being made with mixtures of bog ore and Lux material; the idea being to avoid the high absorption of pressure and diminish the intensity of the revivifying action.

These are the results of the experiments that have hitherto been carried out at the West Gas Works at Amsterdam with the Lux purifying material. Over and above the advantages indicated by the foregoing figures, the employment of the material has increased the author's confidence in his purifying plant. The higher prime cost of the material has been neutralized by economies in labor.

Extension of Gas for Illumination.

[A paper read by Mr. G. W. Thomson, before the Philadelphia Section, Illuminating Engineering Society.]

At the various conventions of gas associations, also the meetings of the Illuminating Engineering Society, many papers have been read and discussed on the general subject of "Gas Lighting." These papers have covered the early history of both gas and gas fixtures, and as all of these papers are on record, it is not my purpose to go into that early history; but I do want to call your attention to the gas lighting of the present. Gas engineers and fixture manufacturers by their preseverance and enthusiasm have designed, built and put on the market, gas fixtures with new principles that are most practicable in their application, and by the use of which a wonderful advance in gas lighting has been made.

One fixture manufacturer who is interested in the art of illumination, after being called upon a number of times to build efficient gas chandeliers, has designed some that have beauty, strength and symmetry, without sacrificing the proper illumination.

The cost of some of these fixtures has run as high as $1,000 to $1,100. By doing this special work, it assured him that there are people who prefer and will use gas for illumination. This, and many suggestions from the Illuminating Engineering Society, have been the means of his issuing two new gas fixture catalogues. One is confined to a higher class of chandeliers to be used in connection with the inverted gas burner; the other deals with especially designed chandeliers suitable for upright burners. The demand for lamps of small candle power has been met by high-class brackets to be used in living or sitting rooms, and equipped with the Welsbach lamps of 20-candle power. This method of illuminating the sitting or living rooms has become very popular. It not only lends itself to attractive and artistic effects, but is much more efficient. They can be used as individual reading lamps, and save crowding around the library table.

Many artistic and elaborate installations of gas lighting have been made, and are being made, the effect of which is not only beautiful,

but being applied on scientific lines, affords good illumination. By being in contact with the buying public and architects we hope to demonstrate and prove to them that gas, with just enough tinge of yellow to make an agreeable appearance, and proper fixtures with which to supply this gas, gives a satisfactory and good illumination.

With the introduction of the inverted gas burner, the possibilities of pleasing and decorative arrangement in the case of incandescent lamps have been enormously enhanced. The user of light has only himself to blame if he fails to get something attractive in the way of gas lamps; there is no lack of means to satisfy even the most fastidious taste in the world of modern gas lighting.

Great changes have been wrought during the past year in the lighting and extinguishing of gas lamps. They are now being lighted and extinguished from any one or more distant points throughout the building by a simple and reliable device. The double push button, representing the stationary form of igniting and extinguishing, is located in the halls, entrances to rooms, etc. This form of lighting and extinguishing is also accomplished by a cord or pendant switch suspended from the fixture. It is a saver of gas, mantles and chimneys. Gas lamps in any number can also be lighted and extinguished by means of a double piping system; that is, the feed and pilot. I might say that great strides have been made with this system in the lighting of large halls, churches, signs, show windows, etc.

The "Jump-Spark System" and the "Straight-Spark Lighting System" have been and are used very extensively for long distance lighting. The jump-spark system of lighting, as applied to the inverted burner, is a distinct improvement over the straight-spark used in connection with the upright burner. Long rows of inverted lamps are being lighted from one switch with or without the use of pilot lamps. By means of the automatic clock, gas lamps are being shut off at set hours. This is especially used on show window displays, there being many progressive merchants who allow their window lamps to burn until 11 o'clock or some set hour, when the clock automatically shuts the gas off.

By the use of a swivel joint, gas arcs are hung at the top of flag poles. This system also allows for the swinging of gas arcs in foundry lighting, high sign or street illumination. With the swivel or union ball joint, the gas arms can be raised and lowered for cleaning or renewal of mantles, etc., similar to the mast arm used with the electric arc in street lighting. The illumination of machine shop or foundry floors is much more evenly distributed than by the old wall lamps or drop lamps above travelling cranes.

Combination chandeliers are now designed whereby the gas arms are being inverted and the electric arms are upright. The gas is provided for illumination, the electric for decoration. This is a step in the right direction, as the inverted lamp can be used with better effect and greater economy than the upright burner, as one-third of the light from upright burners is not thrown in the right direction. The fixtures are built along artistic lines and will certainly give gas lighting with combination chandeliers a very pronounced advantage over the former types. They increase the illumination and reduce the cost.

At the January meeting of the National Commercial Gas Association, a block chain stem inverted gas fixture was shown. The sample shown was a dinning room fixture with art glass dome. This simple invention is a boon to gas lighting because it enables one to produce decorative effects for inverted burners, that to a certain extent are superior to the old devices for illuminating purposes.

The illumination of the sick room is a problem that should be carefully studied. There has been put on the market in London a new sick room lamp which not only gives very good illumination, but is used in the treatment of certain nervous diseases. The mantle is focussed in a silvered reflecting hood fitted with a handle so that the light can readily be accommodated to the face when the burner is suspended from a metallic tube. A sliding and jointed bracket and a balance weight are employed, which enable the lamp to be raised and lowered and moved from side to side. Another feature of the arrangement is the carrying of a pneumatic tube inside the flexible tube, thus enabling the patient to control the light from the bed; the the by-pass acts as a very effective night lamp. One special advantage of the arrangement is that the nurse can have the light thrown upon a table while it is screened from the patient until it is actually required to facilitate the giving of food or medicine. This arrangement was devised for the particular purpose mentioned. It will be apparent that the contrivance will be particularly useful in any bed room, especially for people who are fond of reading in bed. The sliding and jointed bracket combined with any form of inverted burner and shade should be appreciated for office or work shop use. An inverted gas arc lamp of handsome design has been put on the market for the illumination of armories, halls or most any large area. This lamp will certainly find a field which has not been filled by the upright lamp.

The operating and maintenance costs of present-day gas lamps have been reduced over the old method of lighting, and illumination increased. The writer has the optimistic opinion that the near future will show even greater possibilities of further advancement in the use of gas for illuminating purposes.

The Collin Pressure Regulating Valve.

The *Metal Worker* notes that the valve illustrated is known as the Collin steam pressure regulating valve and is made by the Ohio Brass Company, Mansfield, O. Among the special points claimed for it are that the main piston valve will not become cut; that in operation it floats, balanced by pressure, its action not being restricted by a spring; that the auxiliary valve which controls the main valve is out of the path of initial steam thus escaping scale and chips, and that all valves can be removed without disturbing the diaphragm. The diaphragm can be removed while the valve is under pressure, and since no dash pot is used the corroding and sticking of such a member is avoided. Fig. 1 is an exterior view of one side of the valve; Fig. 2 a longitudinal vertical section looking from the opposite side, and Fig. 3 a transverse vertical section.

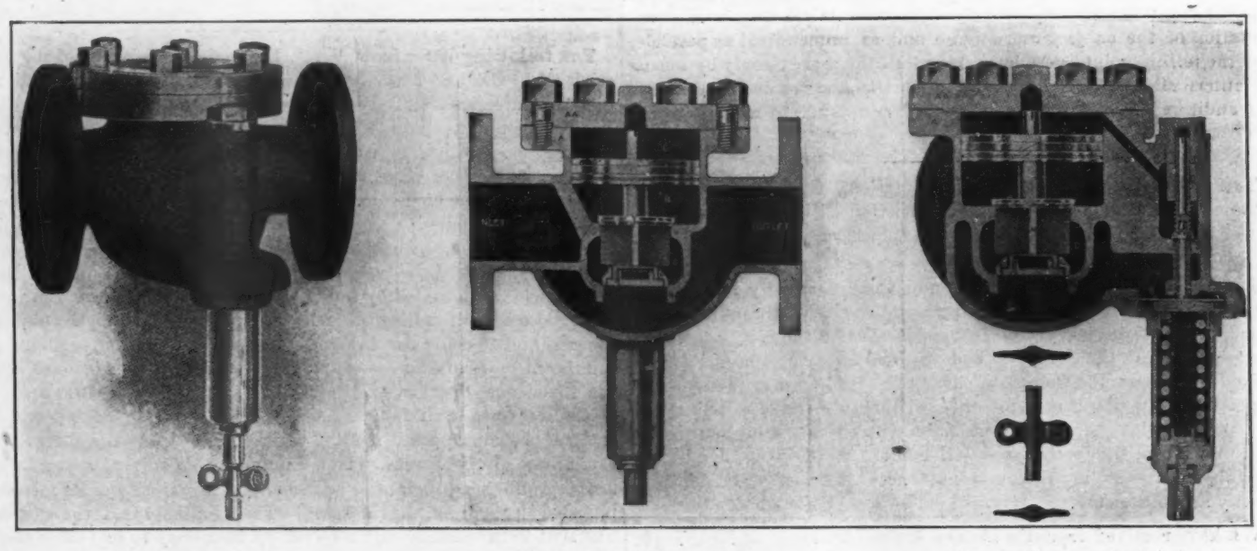

Fig. 1.—Exterior. **Fig. 2.**—Longitudinal Section. **Fig 3.**—Transverse Section.

The operation of the valve will be understood from the two sectional views. Steam enters the valve chamber *B*, but is divided by the splitter *I* in such a way as to divert it from impact on the main valve and its stem, thus equalizing its force on all sides. The splitter is essential to the perfect balancing of the main valve in action and prevents the velocity head from affecting its operation. The pressures in the valve chambers *B* and *C* are equalized by the passage of steam through a small drilled hole in the main piston *K*. The main valve is therefore held shut by a force equal to the difference in pressure between the inlet and outlet on an area equal to that of the main valve port. The spring case *T* carries the regulating spring *U*, which forces the diaphragm *S* upward against the pressure of the service or outlet side of the valve. The controlling valve chamber *F* connects with the main valve chamber *C* through the drilled regulating port *H*, and contains the controlling valve *G*, which is held on its seat *O* by the steam pressure and the spring *P*. The controlling valve is also in contact with the diaphragm *S*.

As soon as the pressure on the service side starts to drop, the spring *U* forces the controlling valve *G* from its seat *O*, thus allowing the steam in the chamber *C* to pass through the regulating port *H* to the controlling valve chamber *F* and the outlet *E*. The pressure in the chamber *C* is thereby reduced below that in *B*, which causes the piston to lift the main valve and permit steam in greater volume to pass to the service side. As soon as the pressure on the service side is restored, the diaphragm forces back the regulating spring and permits the controlling valve to seat, whereupon the pressure in the chamber *C* builds up and the main valve *J* gradually closes. The only steam reaching the controlling valve is that which passes through the small drilled hole in the main piston, and therefore this valve is not likely to be affected by dirt or scale.

Below the main valve *J* guide wings *M* extend through the cushion chamber *D* and carry the supplementary piston *L*, which enters the port *N* when the valve is closed. When the main valve *J* opens it lifts beyond a point where steam cutting can occur before the supplementary piston *L* opens its port *N*. This prevents cutting of the main valve and its seat. In closing, the supplementary piston *L* enters the port *N*, checking the flow of steam and permitting the main valve *J* to come to its seat against a steam cushion formed by high pressure steam in the chamber *D*. The main valve actually floats, opening or closing at the slightest change of pressure above the piston.

The regulating spring *U* is adjusted to give the required outlet pressure by turning the adjusting screw *V* with one end of the key *X*. The other end of the key is then inserted in the lock shield *W*, which is provided with a differential thread, and when this shield is turned the screw is locked in its adjusted position.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

DEAR JOURNAL: On the evening of the 22d of April, before a large audience assembled in the lecture room of the Ryemon Public Library Building, Grand Rapids, Mich., Mr. B. O. Tippy, Vice-President and General Manager of the Grand Rapids Gas Light Company, delivered a lecture on "The History and Manufacture of Coal Gas." His presentation of the subject was concise and as untechnical as possible, and the telling points were brought out all the more clearly by means of lantern slides. The chapter that evidently had greatest interest for his auditors was that on the manufacture and use of mantles of the Welsbach type.—V. T. F.

THE proprietors of the Kalamazoo (Mich.) Gas Company have planned for main extensions this summer that will increase the mileage of the system something more than 10 per cent.

THE Columbus (Ind.) Gas Light and Coke Company held its annual meeting the third week in April and re-elected the officers who managed its affairs last year. In consideration of the fact that within the twelvemonth the Company had obtained an extension of its franchise for 25 years, the Company put out the preliminary plans for an expenditure on plant account that will require an expenditure of $75,000. This is to be paid for out of the proceeds of a bond issue in the sum necessary; likely the issue will amount to $100,000. Under the new charter the selling rate may not exceed $1 per 1,000 cubic feet, on any account or use.

WE have received from the Rotary Meter Company, of New York, a sample of the memorandum card which it proposes to issue monthly hereafter. The sheet will be useful on or in any desk, especially as a special pencil goes with it.

BOSTON evidently means to stamp out the thieves who have been breaking open the cash boxes of prepayment meters, as witness the following, which was forwarded us from that city under date of April 22d: "James Callahan, alias James Willison, was sentenced yesterday by Judge Brown in the Superior Criminal Court to not less than 4 years, nor more than 6 years, in State's Prison, for having burglarious tools in his possession and for larceny from prepayment meters, the property of the Boston Consolidated Gas Company. Callahan, in July, 1907, was sentenced to the House of Correction for 1 year, for a like offense, and, after serving 6 months, was pardoned. About 3 weeks after being released he was arrested by officer Anderson, of Station IV., on March 5th."

THE Waukesha (Wis.) Gas and Electric Company, through its Manager, Mr. H. M. Bush, has surrendered the franchise granted to it by the local authorities of Waukesha, and accepted instead an indeterminate franchise, under the terms of Chapter 499, laws of 1907.

A BILL allowing the gas and electric light companies of Massachusetts, to combine or amalgamate (save in the instances of the Boston Consolidated Gas Company and the Edison Illuminating Company, of Boston) has been reported to the Legislature of that State. The bill is the outcome of a year's investigation of the subject by the Board of Gas and Electric Light Commissioners, whose examination in respect thereto was ordered by the previous Legislature. Sections 2 and 6, which are the impelling sections of the measure, are here reproduced:

"Sec. 2. A gas company may purchase the franchise and property of another gas company whose gas mains are in the same or contiguous municipalities; or may consolidate with such other gas company, and such other gas company may sell and convey its franchise and property to, or may consolidate with, such first mentioned gas company; and an electric light company may purchase the franchise and property of another electric light company whose lines are in the same or contiguous municipalities, or may consolidate with such other electric light company, and such other electric light company may sell and convey its franchise and property to, or may consolidate with, such first mentioned electric light company, provided that no such purchase and sale or consolidation shall be valid or binding until the terms thereof have been approved, at meetings called for the purpose, by a vote of at least two-thirds in interest of the stockholders of each of the contracting companies, and until the Board of Gas and Electric Light Commissioners, after notice and a public hearing, have determined that the facilities for furnishing and distributing light, heat and power will not thereby be diminished, and that such purchase and sale or consolidation and the terms thereof are consistent with the public interest.

"Sec. 6. Nothing contained in this act shall permit or authorize the consolidation of the Boston Consolidated Gas Company with the Edison Illuminating Company."

THE following letter from Mr. J. H. Enright, Manager of the Frederick (Md.) Gas and Electric Company, written under date of the 27th inst., explains itself: To the Editors AMERICAN GAS LIGHT JOURNAL—In these troublous times, when it seems fashionable to take a whack at every corporation in existence, especially gas and electric ones, from a rate point of view, the Frederick Gas and Electric Company did not escape the epidemic. Soon after the convening of our Legislature last January, a few tin can agitators here, who consumed about enough gas and electric current to entitle them to be called consumers, secured the consent of one of our members of the Legislature, who is animated by a very strong desire to reform the world, to introduce a bill calling for a legal rate of $1 per 1,000 cubic feet for gas, and 10 cents per kilowatt for electric current, without any minimum or readiness-to-serve charge whatever, the amended schedule to become operative in Frederick on and after the first prox. It is needless to state that our President, ex-Senator Rohrback and myself, vigorously opposed the bill while it was before the Corporation Committee of the House, which Committee, however, owing largely to the pronounced socialistic sentiments of a majority of its members, reported in favor of the measure. The House passed the measure, was sent to the Senate, and referred by that body to its Committee on Corporations. There we again strongly fought the bill, and secured

an unfavorable report on it. But, imagine our surprise when the report was made to the Senate, a motion was made to substitute the House measure for the report of the Committee. This carried, and then all that was necessary to make the bill effective was the signature of the Governor. Up to this stage of the contest we fought the measure wholly on the merits of our case, asking for no assistance at home or elsewhere. We then determined to ask the Governor for a hearing, which request was granted and a date set therefor. Knowing that Governor Crowther was a man of fine judicial attainments, having the courage of his convictions and honest to a thought, we did not have much fear over the ultimate result. However, so as to strengthen our case, we prepared a statement of our receipts and disbursements, also another one showing our loss with our output figured at the proposed rate for 1907. President Rohrback, also prepared a petition which simply stated that the gas and electric business of Frederick was conducted by honorable gentlemen, that the service was good and that the rates were as reasonable as those could be made. Further, that the bill if passed and enforced would be equivalent to a confiscation of the property. We secured the signatures of our gas and electric consumers to the extent of 75 per cent. of the output of both plants. Armed with this petition, as well as with the financial statement mentioned above, backed up with other applying facts, our President went before the Governor, and in an able and convincing argument presented all of the facts in the case, with the result that Governor Crowther promptly vetoed the bill. In conclusion I desire to state that perhaps the most remarkable thing about this affair is the fact of it having been the only case on record (as far as I can learn) where the gas and electric consumers came to the rescue of their company, and took a prominent part in accomplishing the defeat of a measure intended to secure a lower rate on gas and electric current intended for their own use. However, without having any desire to throw bouquets at ourselves, I cannot attribute any other reason for this kind and generous act towards us than that it was a recognition on their part of honest effort on our part to give them good service, and paying strict attention to their wants at any and all times.

Mr. Samuel R. Shipley, formerly one of the most prominent business men in Philadelphia, Pa., in which city he was born January 8, 1828, died there at his home, 1034 Spruce street, the morning of the 22d ult. At the time of his death he was a Director of the United Gas Improvement Company.

At a meeting of the Board of Directors of the United Gas Improvement Company, held April 27th, Mr. M. L. Clothier was elected to the vacancy occasioned by the death of Mr. Samuel R. Shipley. The Board also adopted the following minute to the memory of Mr. Shipley:

"*Whereas*, Samuel R. Shipley, whose death on the 22d day of April, 1908, has been announced to this Board, was for 4 years a member of this Company's Board of Directors, performing the duties of his office with zeal, integrity and good judgment;

"*Resolved*, That in recognition of his services on behalf of the corporation and in expression of the personal respect for his memory entertained by his associates on this Board, this minute be inscribed upon the records of the corporation and a copy sent to his family."

Mainly through the efforts of Mr. C. L. Gerould, President of the Mount Vernon (Ind.) Electric Light and Power Company, a contract for the public lighting of that place, to run for 10 years from January 1st, 1909, has just been closed. The agreement calls for the maintaining of not less than 92 arc lamps, inclosed type, 7½ kilowatts, in the gross sum of $6,000. Additional lamps are to be paid for at the rate of $65 each per annum. It was also agreed that electric current sold on commercial account after January 1st, prox., will be billed at 10 cents per kilowatt, a concession of 2 cents.

Mr. W. H. Harrison, of Cincinnati, O., has made application for a franchise to construct and operate a gas works in Anderson, S. C.

The following "perpetration" is from the Suburban Gas Company's regular issue of "Gasp-s" for this month—the Company's headquarters are in Chester, Pa.: "You can't saw wood with a hammer!" "Adzactly."

Mr. Edward Neuman, Chief Electrician to the San Antonio (Tex.) Gas and Electric Company, delivered an excellent address to the members of the San Antonio Scientific Society, the evening of the 17th ult. His subject was "Electricity as Applied to Lighting," and in it he well covered the recent developments in filament types of electric illumination. His audience included many of the prominent scientists and engineers of San Antonio.

The manufacture of gas in the works of the Windsor (Vt.) Gas Light Company was discontinued the last week in April. The bondholders are in possession of the property.

Mr. J. R. Thompson, of Los Angeles, Cal., has been awarded the contract for the construction of the gas works' buildings at Banning, Cal.

Messrs. D. C. Earnest, W. H. McGrath and J. M. McCormick, have petitioned the City Council of Dallas, Tex., for a franchise to construct and operate a fuel gas plant in that city, the maximum rate to be not in excess of 80 cents per 1,000 cubic feet. The proposers "are proposing" to use the peat beds of Texas as the source of their carbonaceous material, wherefore we are led to exclaim the chances are that the scheme will peter out.

For the quarter ended March 31, 1908, the payment made by the United Gas Improvement Company to the authorities of Philadelphia on royalty account amounted to $263,852.92, as against a payment of $213,649.70 on like account for the corresponding quarter of 1907. In connection with these payments it is to be noted that the Company for the next 5 years pays to the city a royalty of 15 cents per 1,000. For the 5 prior years the royalty was 10 cents per 1,000. Commencing 1913 the royalty will be increased to 20 cents per 1,000 cubic feet. Since this lease was signed (Nov. 30, 1897) the Company has further paid into the City Treasury the sum of $709,731.51, which represents back bills collected by the Company on account of debts due the city prior to the United Gas Improvement Company's having obtained control of the works.

A correspondent incloses the following from Connellsville, Pa., under date of the 27th inst.: "Mr. J. W. Reiser, who was Superintendent of the Fayette County Gas Company for a number of years, and who was later transferred to the Company's headquarters in Johnstown, Pa., has been transferred to Cincinnati. The corporation with which Mr. Reiser is connected has for 5 years had gas piped to the city limits of Cincinnati and Cleveland, but owing to a delay in the negotiations the supply was never properly laid. Everything now has been arranged and Mr. Reiser will superintend the piping work. It is estimated that it will take 5 years to complete it, during which period some of the largest gas mains in the world will be laid through that section of Ohio."

Mr. John D. Moore, General Superintendent of the East Ohio Gas Company, died at his home in Cleveland, O., the morning of the 25th ult. He was quite well known to those connected with the artificial gas industry of Western New York from his former active affiliation with the Buffalo Natural Fuel Gas Company.

At a recent meeting of the Committee on Public Buildings, Portland, Me., it was determined to equip the laboratories of the Deering High School with apparatus and devices designed for the use of natural gas as fuel. At the present time gasoline is employed for producing the fuel used.

The Newport Water, Light and Power Company, to distribute water and gas to the inhabitants of Newport, Ark., has been incorporated by Messrs. W. V. and A. N. Walker, John A. Williams and L. Minor. It is capitalized in $100,000, of which $75,000 is paid in.

"W. H. F.," writing from Salt Lake City, Utah, under date of the 25th ult., says: "To satisfy the prejudiced and misinformed people of a certain place in this city that using gas as a lighting medium would not interfere with plant life, I placed a plant under a gas burner in one room, and about the same time planted a like flower in the outer yard. Later on it was shown that the indoor located plant had grown and thriven as luxuriantly by night as did the plant outside by day. This seemed to prove that the rays of a gas light are equal in tone, color-balance and chemical effect to those of natural sunlight."

The proprietors of the Saratoga Springs (N. Y.) Gas, Electric Light and Power Company have notified the residents that, beginning with the 1st inst., the gross rate for gas shall be $1.45 per 1,000, with 10 per cent. off for cash payment.

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

THOS. J. CUNNINGHAM,
ELBERT P. CALLENDER,
EDITORS.

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NOTIFICATION RESPECTING ADVERTISING.

Orders for new advertising, or for changes in standing advertisements, to insure attention in the issue following their reception, must be in hand any time of Wednesday.

MONDAY, MAY 4, 1908.

The Market for Gas Securities.

The market for city gas shares was active and strong last week, Consolidated selling up to 121¼. It opened to-day (Friday) at 119¼ bid, and by noon had sold up to 120-120¼. The regular quarterly dividend of 1 per cent. was declared and made payable June 15th. Brooklyn Union is 108 bid.

Out-of-town shares are generally higher, and the inquiry for bonds continues. Despite the latter standing, some excellent opportunities for investment in absolutely good gas 5's at a figure equal to yielding 6¼ per cent. are still in evidence.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

MAY 4.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	120	120¼
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	3,000,000	1,000	92	7
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual	3,500,000	100	—	170
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	90	95
New York & Richmond Gas				
Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98	104
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	100	105
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	90	98
Standard	5,000,000	100	70	100
Preferred	5,000,000	100	100	125
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	108	120
1st Con. 5's, due 1948, M. & N.	15,000,000	—	91½	92
Yonkers	299,650	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	1	11-16
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	500,000	1,000	95	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
" " Bonds, 5's	5,250,000	1,000	63	66
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed				
Gold Bonds	7,660,000	1,000	104	106¼
Cincinnati Gas and Electric				
Co.	20,500,000	100	89½	90
Columbus (O.) Gas Co., 1st				
Mortgage Bonds	1,500,000	1,000	92	98
Columbus (O.) Gas Lt. &				
Heating Co.	1,682,750	100	87	88
Preferred	3,026,500	100	81	84
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	—	105
Mortgages, 6's	3,600,000	—	—	118
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	—	—	74½	75
Detroit City Gas Co.	6,000,000	50	—	50
" Prior Lien 5's	4,618,000	1,000	—	98
Detroit Gas Co., 5's	381,000	1,000	75	80
" Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co.,				
Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Lt. Co.,				
1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of				
New Jersey	10,500,000	—	100	105
" Bonds, 5's	10,500,000	—	101	102½
Indianapolis	2,000,000	—	60	70
" Bonds, 5's	2,050,000	—	104½	105
Jackson Gas Co.	250,000	10	82	—
" 1st Mtg. 5's	250,000	1,000	97	100
Kansas City Gas Light Co.,				
of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	—	100
Preferred	2,500,000	100	60	70
Bonds	10,000,000	1,000	104	104¼
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,470,000	50	143	145
Madison Gas & Elec. Co.				
" 1st Mtg. 6's	350,000	1,000	106	108¾
" 6 per cent. scrip,				
due 1910	100,000	25	60	60¼
Massachusetts Gas Companies, of Boston	25,000,000	100	52	53⅛
Preferred	25,000,000	100	86¾	87
Montreal, Canada	2,000,000	100	218	218¾
Nashville Gas Lt. Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co.,				
Chicago	25,000,000	100	89¾	90 x
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Elec. Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105⅛
San Francisco, Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—				
1st Mtg. 5's	751,000	1,000	92	—
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgages, 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	2,465,000	1,000	96¼	—
Syracuse, N. Y.	1,375,000	100	50	55
Bonds	2,047,000	1,000	102	—
Washington, D. C.	2,600,000	20	320	325
1st Mortgage, 6's	600,000	—	—	—
Western, Milwaukee	4,000,000	—	—	—
Wilmington, Del.	600,000	50	230	—

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Position as Manager or Superintendent of Gas and Electric Company,

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Dimensions, 10 feet by 14 feet by 3 feet deep, with dry center valve and connecting pipes 10 inches diameter. Seal 16 inches deep. Price, $600.

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Two New No. 9½ Green Horizontal Gas Exhausters or Blowers. Capacity per revolution, 55 cubic feet; 20-inch connections.

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Three Cast Iron Purifying Boxes, 21 feet by 21 feet by 4 feet deep; seal, 30 inches deep.

One Traveling Crane (track on floor), with oil pump and fittings complete, and 12 inch pipe, valves and fittings for a 3-box system complete.

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171-tf DAYTON, O.

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With Instructions for Care and Working of the Same,

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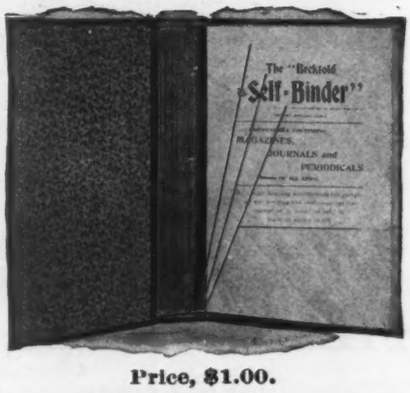

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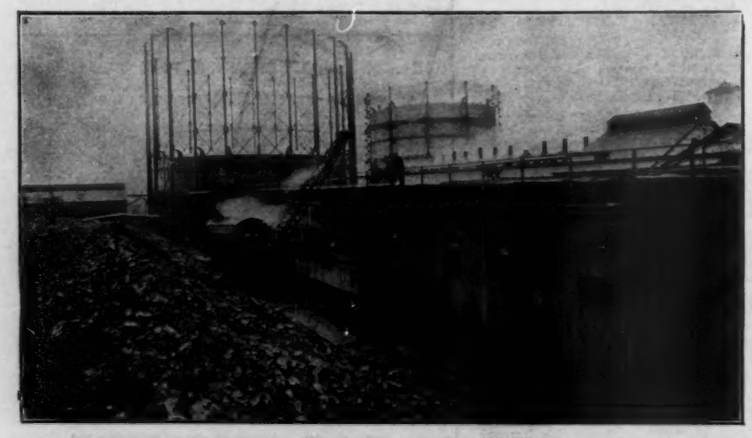
Gas Engineer's Pocket-book, —BY— HENRY O'CONNOR
Comprising Tables, Notes and Memoranda relating to the Manufacture, Distribution and Use of Coal Gas, and the Construction of Gas Works. PRICE, $3.50. For Sale by
A. M. Callender & Co., 42 Pine St., New York City.



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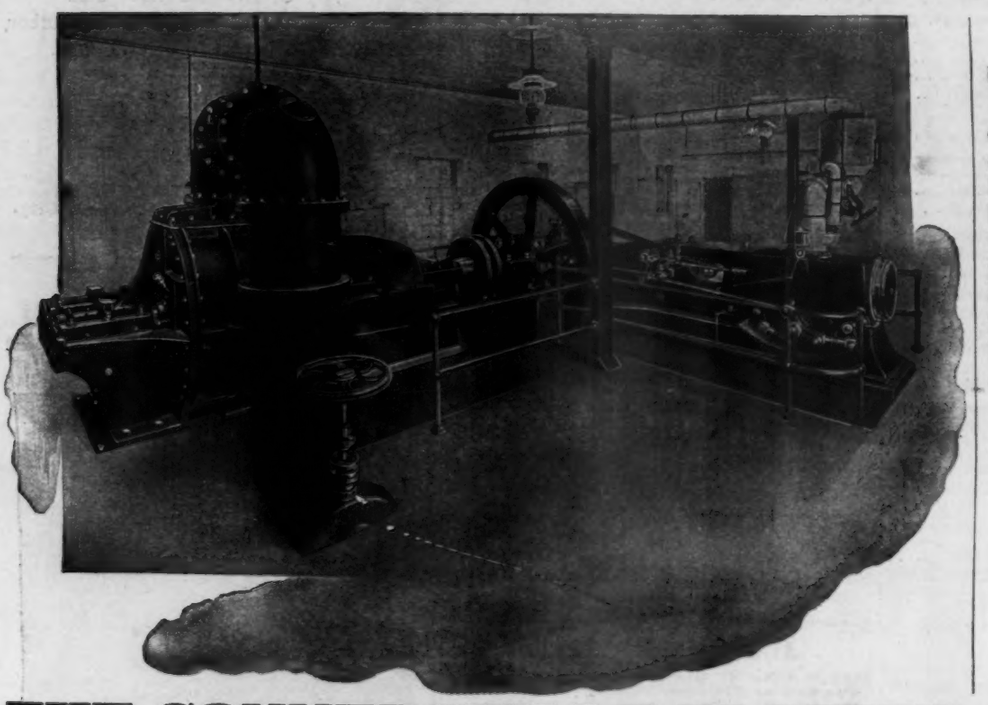

THIS cut shows one of our High Pressure machines and a 4-valve engine connected by one of our leather link flexible couplings. Two of these units were installed for the Peoples Gas Light and Coke Co., Chicago, at their 73d St. Station. Each machine has a capacity of 14,000,000 cubic feet per day.

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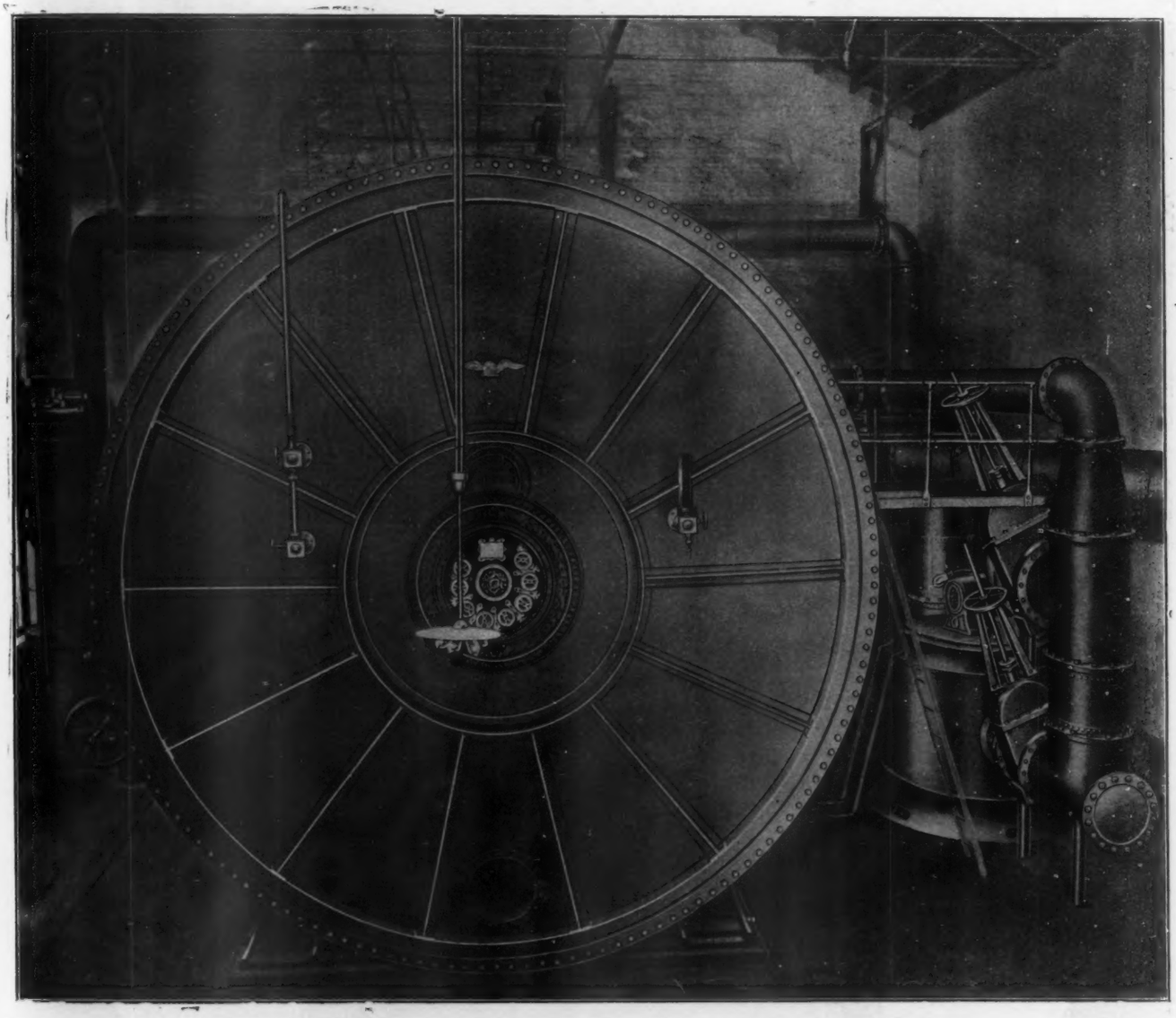
EUROPEAN CONNECTIONS:

The Rotary Meter Co. (1905) Ltd., Manchester, England.
Compagnie pour la Fabrication des Compteurs et Materiel d'Usines a Gaz, Paris, France.



Interior View of part of Meter Room—Twenty-first Street Works,
CONSOLIDATED GAS COMPANY, NEW YORK.
Old Style Wet Meter, 6,000,000 cu. ft. capacity per day.

ROTARY STATION METER,

4,000,000 cu. ft. capacity per day (at right of picture).

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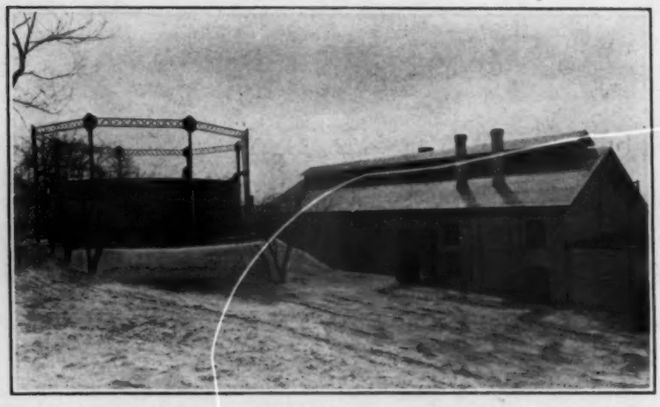

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Are Coming into Greater Favor,

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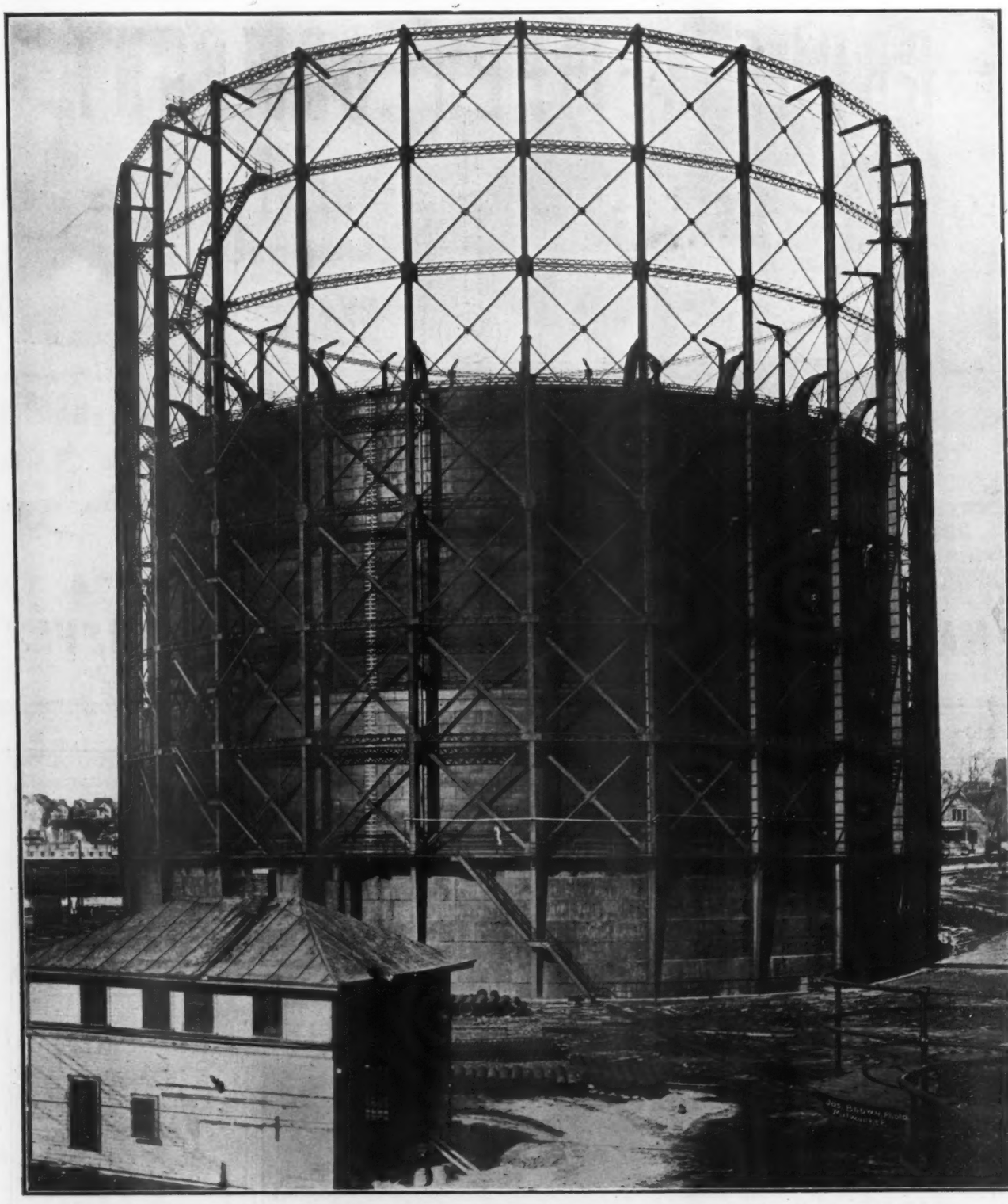

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BENCH WORK

CHARGING AND DISCHARGING MACHINERY

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ISBELL VALVES SPECIALS

TAR EXTRACTORS

P. & A. TAR EXTRACTORS FOR WATER GAS

ROTARY AMMONIA SCRUBBERS

SHAVING SCRUBBERS PURIFIERS STREET GOVERNORS

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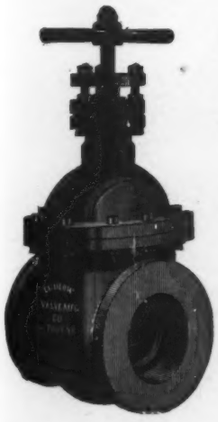
ESTABLISHED 1865



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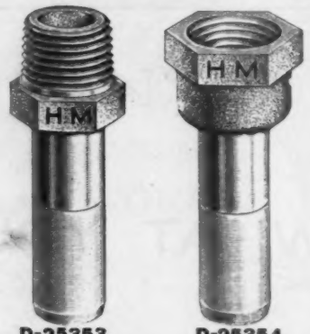

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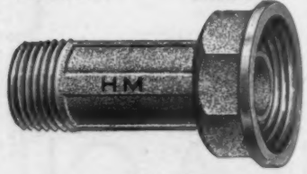

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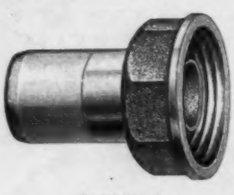
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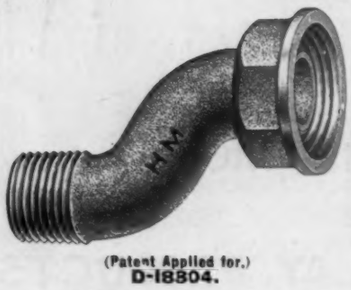

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Installation showing our latest improved machines, with flexible rope coupling, for large units.

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These Burners Give a Large, Well-Shaped Flame.

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Photometrical and Experimental Apparatus.

PUBLIC LIGHTING TABLE.

MAY, 1908.

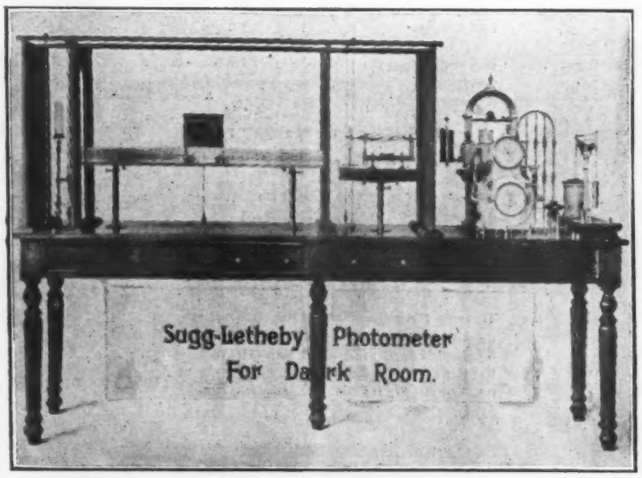
Table No. 1.
FOLLOWING THE MOON.

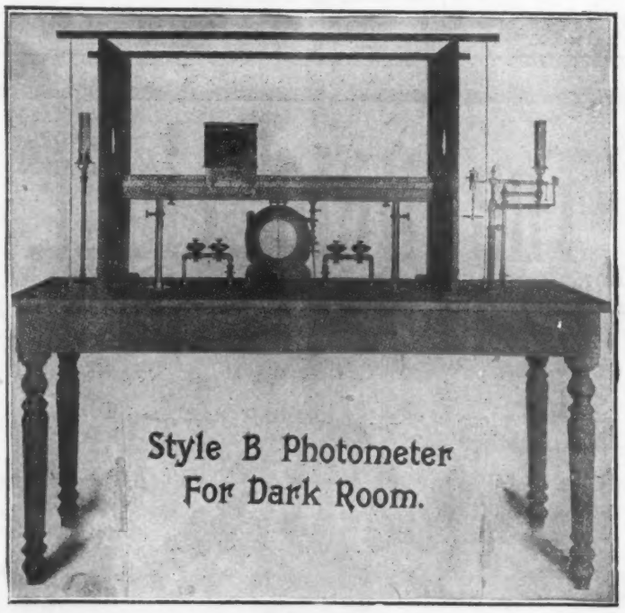
Day of Week.	Date.	Light.	Extinguish.
Fri.	1	7.20 PM	4.00 AM
Sat.	2	7.20	4.00
Sun.	3	7.30	3.50
Mon.	4	7.30	3.50
Tue.	5	11.00	3.50
Wed.	6	11.40	3.50
Thu.	7	12.20 AM FQ	3.50
Fri.	8	12.50	3.50
Sat.	9	1.20	3.50
Sun.	10	1.50	3.50
Mon.	11	2.10	3.50
Tue.	12	2.40	3.50
Wed.	13	3.10	3.50
Thu.	14	No L.	No L.
Fri.	15	No L FM	No L.
Sat.	16	No L.	No L.
Sun.	17	7.40 PM	10.00 PM
Mon.	18	7.40	11.10
Tue.	19	7.40	12.10 AM
Wed.	20	7.40	1.00
Thu.	21	7.40	1.40
Fri.	22	7.40 LQ	2.20
Sat.	23	7.40	2.50
Sun.	24	7.50	3.20
Mon.	25	7.50	3.40
Tue.	26	7.50	3.40
Wed.	27	7.50	3.40
Thu.	28	7.50	3.40
Fri.	29	7.50 NM	3.40
Sat.	30	7.50	3.40
Sun.	31	7.50	3 30

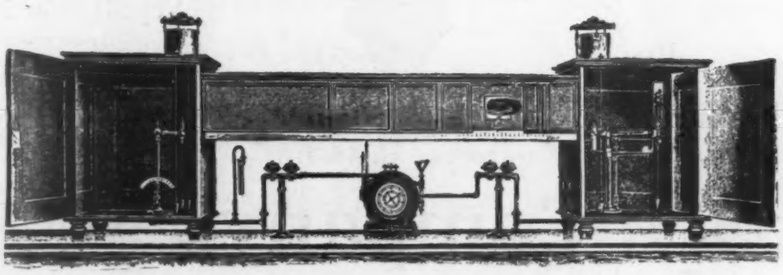
TOTAL HOURS DURING 1908.

By Table No. 1.

	Hrs.Min.
January	228.30
February	187.30
March	192.00
April	160.10
May	155.10
June	138.00
July	155.50
August	173.40
September	185.20
October	214.00
November	218.10
December	226.40
Total, yr.	2235.00







Closed Photometer For Light Room.

CIRCULARS SENT ON REQUEST.

PUBLIC LIGHTING TABLE.

MAY, 1908.

Table No. 2.
NEW YORK CITY.
ALL NIGHT LIGHTING.

Day of Week.	Date.	Complete Lighting in One Hour From Time Given P. M.	Complete Extinguishing in 50 Minutes From Time Given A. M.
Fri.	1	6.47	3.52
Sat.	2	6.47	3.52
Sun.	3	6.47	3.52
Mon.	4	6.47	3.52
Tue.	5	6.47	3.52
Wed.	6	6.47	3.52
Thu.	7	6.57	3.42
Fri.	8	6.57	3.42
Sat.	9	6.57	3.42
Sun.	10	6.57	3.42
Mon.	11	6.57	3.37
Tue.	12	6.57	3.37
Wed.	13	6.57	3.37
Thu.	14	7.07	3.27
Fri.	15	7.07	3.27
Sat.	16	7.07	3.27
Sun.	17	7.07	3.27
Mon.	18	7.07	3.27
Tue.	19	7.07	3.27
Wed.	20	7.07	3.27
Thu.	21	7.12	3.22
Fri.	22	7.12	3.22
Sat.	23	7.12	3.22
Sun.	24	7.12	3.22
Mon.	25	7.12	3.22
Tue.	26	7.12	3.22
Wed.	27	7.12	3.22
Thu.	28	7.12	3.17
Fri.	29	7.12	3.17
Sat.	30	7.12	3.17
Sun.	31	7.12	3.17

TOTAL HOURS DURING 1908.

	Hrs.Min.
January	481.50
February	329.15
March	351.50
April	341.50
May	233.05
June	218.10
July	282.55
August	254.55
September	292.25
October	420.45
November	374.30
December	411.05
	3992.35
Deduct on account of 50 min. extinguishing time	30.30
Total, yr.	3962.05

NEW YORK, 318 West 42d Street. BOSTON, 820 Beacon Building. PHILADELPHIA, Broad and Arch Streets. ST. LOUIS, 712 Roe Building. CHICAGO, 218 La Salle Street. SAN FRANCISCO, 512 Oak Street.

WELSBACH STREET LIGHTING COMPANY

....OF AMERICA....

No. 36.

Controls and Operates the **Welsbach System of Street Lighting,**

Which includes its specially DESIGNED and PATENTED BURNER for PARK LIGHTING exclusively.

Uniformly SUCCESSFUL in 180 Cities and Towns.

By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

POINTS OF MERIT:

It is { Economical, Attractive, Successful, Up-to-date.

IT LIGHTS THE STREET.

Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

Correspondence Solicited from Gas Companies and Others interested in Municipal and Outside Lighting.

No. 38.

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For decorative appearance and large volume of light at a popular price to the consumer,

THE CHIC LIGHT

is practically alone in the field. Complete satisfaction to the user is its strong point.

THE CHIC LIGHT—Design No. 71310.

PRICES:

Boxed complete, with No. 71 Welsbach burner, No 310 F. Q. M. cylinder, No. 196 Junior J Brand Welsbach mantle, including the No. 316 opal shade, which will be packed separately.

Price, complete, clear cylinder, each, dozen lots, ... $1.35
Price, complete, clear cylinder, 100 lots, each, ... 1.25

When supplied with **No. 310 F. Q. M. Opal Cylinder** add 10 cents to above list.

Price of Shade No. 316.
Package Contains 16 Dozen.

Price, per dozen, ... $4.40
Price, original package, per dozen, . 4.00

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OF THE

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Suffolk, Va.
Winsted, Conn. (2d contract).
Nashua, N. H.
Augusta, Me. (2d contract).
Everett, Mass.
Jenkintown, Pa. (2d contract).
Coney Island, N. Y.
Mexico, Mo.
Jacksonville, Fla.
Syracuse, N. Y. (2d contract).
Atlanta, Ga. (2d contract).
Holyoke, Mass.
Peoria, Ills.
Schenectady, N. Y. (2d contract).
Danbury, Conn.
Galveston, Tex. (2d contract).
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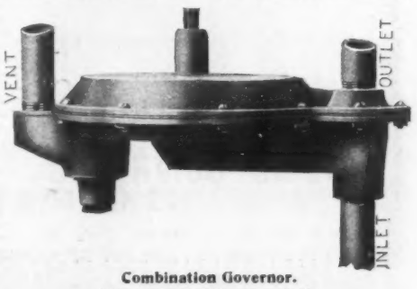

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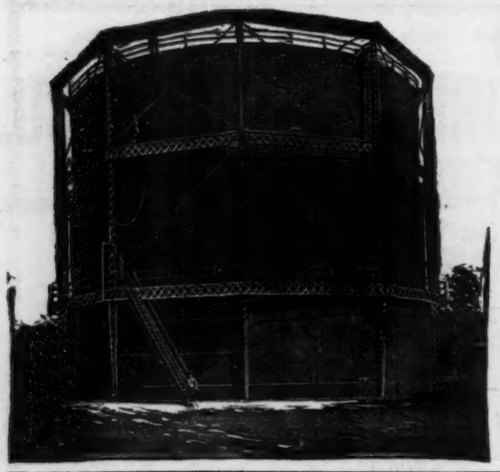

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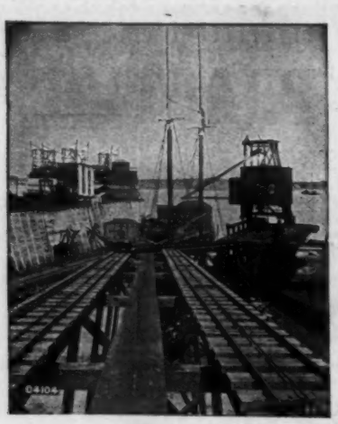

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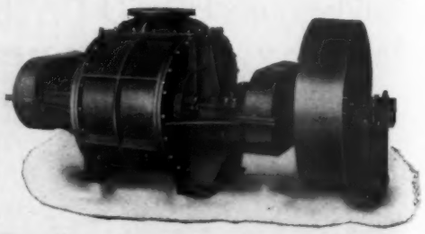

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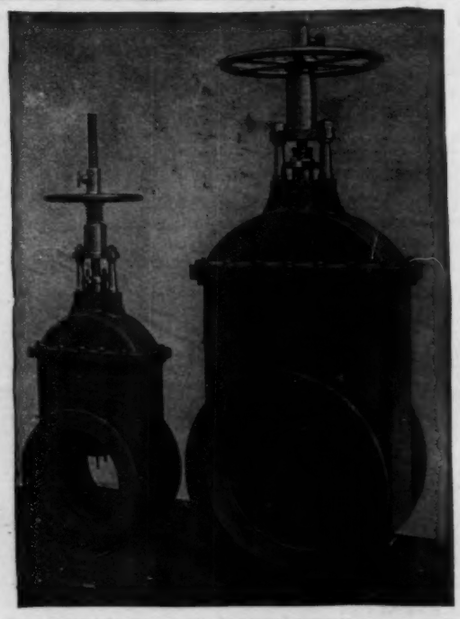

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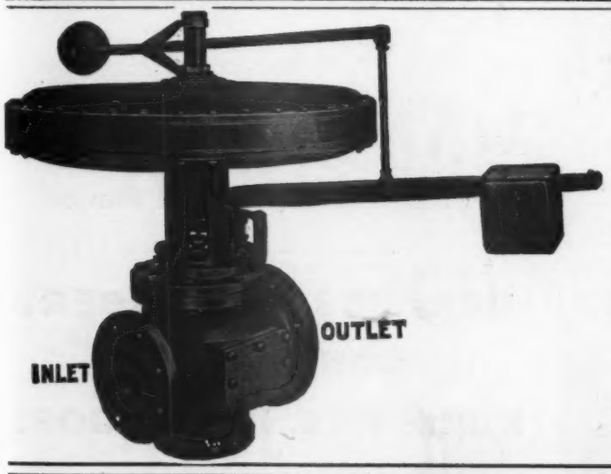

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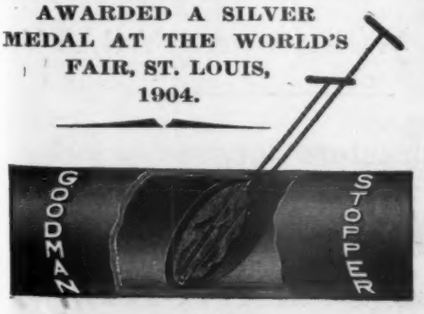

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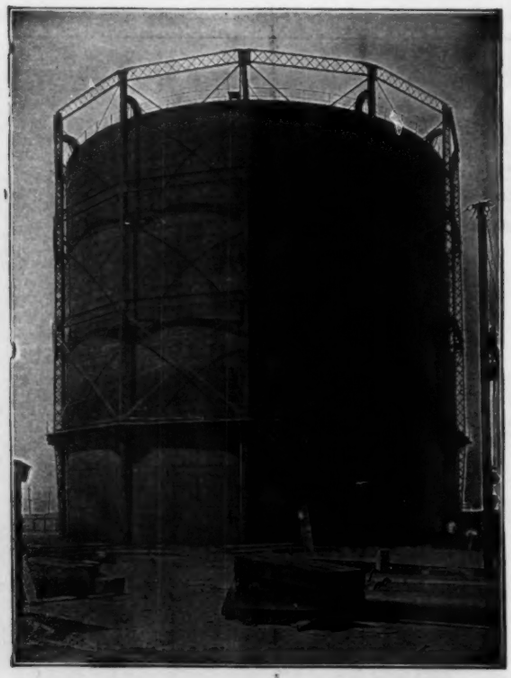

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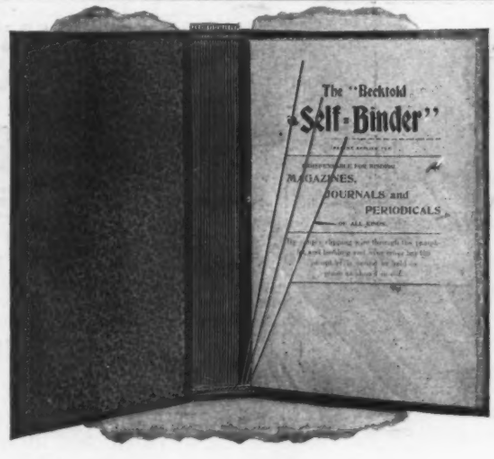

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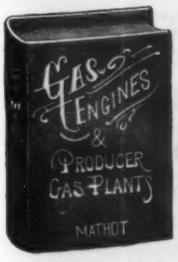

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